

REPORT, RETURNS AND STATISTICS
OF THE
INLAND REVENUES
OF THE
DOMINION OF CANADA
FOR THE NINE MONTHS ENDING MARCH 31
1907

PART III
ADULTERATION OF FOOD

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

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EXCELLENT MAJESTY

1907

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REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE.

INSPECTION OF FOODS, DRUGS AND FERTILIZERS.

To the Hon. WM. TEMPLEMAN,
Minister of Inland Revenue.

SIR,—I have the honour to submit herewith the reports of the official analysts of the Dominion for the fiscal period ended March 31, 1907.

The following is a summary statement of the number of collected samples analysed by the district analysts during the fiscal period ended March 31, 1907.

Description.	Genuine.	Doubtful.	Adulterated.	Total.
Butter.....	94	2	15	111

The following is a summary statement of the collected samples analysed by the Chief Analyst and staff at the Inland Revenue Laboratory in Ottawa for the period ended March 31, 1907.

Description of Sample.	Genuine.	Doubtful.	Adulterated.	Total.
Potted Meats and Bologna Sausages.....				90
Rolled Oats and Oatmeal.	91	64		155
Common Salt.....	81	6		87
Tomato Catsup.....	26	23		49
Tea.....	82	7		89
Butter.	871		10	881
Breakfast Foods.....				99
	1,151	100	10	1,450

The following statement shows the total number of samples examined during the fiscal years ended June 30, 1904, 1905, 1906 and the fiscal period ended March 31, 1907.

	1904.	1905.	1906.	1907 (9 mos.)
1. Number of samples collected by the food inspectors for examination.....	1,417	731	2,944	1,551
2. Number of these samples examined by the public analysts	213	305	849	101
3. Number of these samples examined in the laboratory here	1,341	634	2,469	1,450
4. Number of duplicate samples submitted to the district analyst after being worked here.....				10
5. Number of samples examined in the laboratory here, duplicates of which were not analysed by the public analysts.....	1,808	957	2,677	2,090
This number however includes the following :—				
Samples of beer.....	15	31	18	19
" vinegar.....	239	239	273	304
Standard fertilizers.....	111	120	153	176
Sundry others.....	83	119	74	123
Samples examined for other departments :—				
Agriculture.....				4
Militia and Defence.....	5	2	22	24
Total samples examined.....	2,363	1,653	3,913	2,201

In my report for the years 1904 and 1907 reference was made to the desirability of establishing standards of purity for food. This subject has, since these dates, received the careful consideration of the Department and the Chief Analyst, in his report, states that he hopes to record substantial progress during the next twelve months.

It will be observed that, with the exception of butter, no adulteration was discovered in connection with articles examined during the fiscal period ended March 31, 1907.

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Proceedings were instituted, through the courts, against persons found selling adulterated butter. Several convictions were secured and the balance of the cases are in the hands of the Department of Justice.

I have the honour to be, sir,

Your obedient servant,

W. J. GERALD,

Deputy Minister.

INLAND REVENUE DEPARTMENT,

OTTAWA, September 24, 1907.

REPORT OF THE CHIEF ANALYST

317 QUEEN STREET,

OTTAWA, August 8, 1907.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—The sudden and entirely unexpected death of Mr. Thomas Macfarlane, chief analyst, on the 10th of June last, has necessitated my undertaking the task of preparing this report ; the content of which has regard to the last period of work done under his guidance and control

As a matter of fact, the work herein recorded, covers a period of only nine months ; which is explained by the change in the date of closing the fiscal year, which now ends with the 31st of March, instead of the 30th June, as formerly.

During this nine months period, 1,551 samples have been collected by our food inspectors, and analysed. This work is given in detail in the following bulletins, which appear as an appendix to this report.

Number of Bulletin.	Subject.	Number of Samples.
125	Potted meats and Bologna sausages	90
126	Food preservatives	
127	Rolled oats and oatmeal	155
128	Common salt	87
129	Tomato catsup	49
130	Tea	89
131	Butter, 1906	101
132	Breakfast foods	99
133	Butter, 1907	881
	Total	1,551

Besides what has already been mentioned the following additional analytical work was carried out in this laboratory :—
Total number as per Bulletins, 1,551.

Inland Revenue—

Standard Fertilizers	176
Beer	19
Fu-el oil	9
Vinegar	304
Spirits	4
Patent medicines	27
Fertilizers	4
Green peas (canned)	1
Wood-spirit	18
Malt	2
Maple syrup	4
Flour	1
Beverage	3

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Vinegar (special).....	3	
Chocolate	2	
Cocoa butter.....	1	
Porterine	1	
Cream	2	
Water	3	
Essence of lemon	1	
" vanilla	1	
Acetic acid.....	12	
Olive oil	2	
Lard.....	1	
Maple sugar	3	
Butter (special).....	4	
Turpentine.....	2	
White lead in oil	1	
Milk	1	
Black pepper	2	
Honey.....	5	
Shorts	1	
Ink.....	2	
		622
Agriculture—		
Preservatives.....	3	
Butter (oleomargarine).....	1	
		4
Militia and Defence—		
Coal	1	
Jam.....	21	
Water.....	2	
		24
		650
		1,551
		2,201

The total number of samples analysed is therefore 2,201, for the nine months from July 1, 1906 to March 31, 1907.

In addition to the work stated there has been prepared for use in vinegar testing, the following solutions, supplied to the Outside Excise service :—

Inland Revenue—

Outside service.

Soda solution (normal)	30	Winchesters.
Phenolphthalein Sol.....	12½	lbs.
Normal sulphuric acid.....	4	litres.

Extended researches upon the denaturing of alcohol for industrial purposes, and the investigation of natural gas, have been carried out and reported to the proper authorities. The work contained in Bulletin No. 126, which summarizes our knowledge of food preservatives has also entailed the expenditure of much time.

In his last report, the late lamented chief analyst drew your attention to the very important subject of defining standards for food and drug products ; and recommended the publication of *pro tem.* results arrived at by a committee of experts, meeting at Washington, D. C., and approved by the secretary of Agriculture of the United States of America. This matter is recognized as of prime importance by all countries possessing Food laws ; and while I am not yet in a position to add anything of importance to the

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report published last year, I shall keep the matter before me, and hope to record substantial progress during the next twelve months.

I append the reports of the several district analysts, covering the period July 1, 1906 to March 31, 1907.

I have the honour to be, sir,

Your obedient servant,

A. MCGILL,
Chief Analyst.

112 ST. FRANÇOIS XAVIER STREET,

MONTREAL, April 8, 1907.

The Deputy Minister,
Inland Revenue Department,
Ottawa.

DEAR SIR,—I have the honour to submit my report of analyses made during the fiscal period (nine months) ending March 31, 1907.

I have analysed 46 samples of butter. Of these 32 were genuine and 14 adulterated.

The adulterant in four of the samples is water. The remaining ten adulterated samples were found to be margarine or butter substitute.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) J. T. DONALD.

66 BEDFORD ROW,

HALIFAX, N.S., July 29, 1907.

The Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit my annual report on the samples of food, analysed by me during the period ending March 31, 1907.

	Genuine.	Adulterated.	Total.
Butter	14	1	15

I have the honour to be, sir,

Your obedient servant,

(Sgd.) MAYNARD BOWMAN.

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FACULTY OF APPLIED SCIENCE AND ENGINEERING,
UNIVERSITY OF TORONTO,
SCHOOL OF PRACTICAL SCIENCE,

TORONTO, July 31, 1907.

The Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit to you my report for the fiscal period, July 1, 1906 to March 31, 1907.

During the past year I have analysed 26 samples of butter of which 25 were genuine and 1 doubtful.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) W. HODGSON ELLIS,
per J. W. BAIN.

OTTAWA, July 29, 1907.

The Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit my annual report of the work done under my supervision during the fiscal year ending March 31, 1907.

Sixteen samples of butter were submitted to me for analysis and report. Of these fifteen were pronounced genuine and one reported as deficient in fat.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) F. X. VALADE, M.D.

PUBLIC ANALYST'S OFFICE,
VICTORIA, B.C., August 5, 1907.

To the Commissioner of Inland Revenue,
Ottawa.

SIR,—I beg to submit my report for the period from 1st July, 1906 to 31 March, 1907.

During this period I have analysed eight (8) samples of butter; all being found genuine.

I have the honour to be, sir,

Your obedient servant,

C. J. FAGAN, *Official Analyst.*

APPENDIX A.

BULLETIN No. 125—POTTED MEATS AND BOLOGNA SAUSAGES.

OTTAWA, September 6, 1906.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—In my report of July 25 last, I referred to the possibility that some of the samples of potted meats described in Bulletin No. 123 (Canned Meats) might be found to contain cereal products, and advised you that it was the intention to refer to them in a subsequent report. Since then they have been subjected to microscopical examination and also to the test for foreign colouring matter by Mr. Lemoine. Only in one instance was any of the latter detected: namely, in sample No. 409, Chicken, Ham and Tongue, manufactured by W. Clark, Montreal. All the other potted meats referred to were free from dyes. As regards the presence of foreign starch and consequently of meal from cereals of some description, it was detected in the following samples, of which more particular mention has been made in Bulletin No. 123.

Name of Sample.	No. of Sample.	Name and Address of Vendor.	Name and Address of Manufacturer or Furnisher.
District of Nova Scotia.			
Ready Lunch Turkey Loaf.	27129	B. Egan & Christolm, Halifax, N.S.	W. Clark, Montreal, P.Q.
Chicken, Ham and Tongue.	27130	-	-
Veal Loaf	27136	J. F. Crowe & Co., Halifax, N.S.	Armour Packing Co., Chicago.
Ham Loaf	27143	Dillon Bros., Halifax, N.S.	Libby, McNeill & Libby, Chicago.
Potted Chicken	27144	-	-
Veal Loaf	27149	W. E. Crowe & Co., Halifax, N.S.	-
Deviled Tongue	27150	C. E. Choat & Co., Halifax, N.S.	Laing Packing Co., Montreal.
Potted Tongue	27157	Black & Co., Truro, N.S.	Libby, McNeill & Libby, Chicago, U.S.
Potted Ham	27165	E. E. O'Brien, Truro, N.S.	Wm. Clark, Montreal.
Potted Tongue	27168	H. W. Ryan, Truro, N.S.	Libby, McNeill & Libby, Chicago, U.S.
District of Prince Edward Island.			
Beef Loaf	28296	Sanderson & Co., Charlottetown	Libby, McNeill & Libby, Chicago, U.S.
Veal Loaf	28309	R. T. Holman, Summerside	G. H. Hammond Co., Chicago, U.S.
Potted Ham	28315	T. White, Charlottetown	The Dominion Packing Co., Charlottetown, P.E.I.
Ham Loaf	28318	M. Duffy, Charlottetown	Libby, McNeill & Libby, Chicago, U.S.

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Name of Sample.	No. of Sample.	Name and Address of Vendor.	Name and Address of Manufacturer or Furnisher.
<i>District of New Brunswick.</i>			
Veal Loaf.....	24214	Bowman & Cole, 28-30 Water St., St. John, N.B.	Libby, McNeill & Libby, Chicago, U.S.
Potted Ham.....	24219	E. E. MacMichael, 40 Dock St., St. John, N.B.	Armour & Co., Chicago, U.S.
	24222	John Jackson, 15-16 South Market Wharf, St. John, N.B.	The Wm. Davies Co., Ltd., Toronto, Ont.
Devilled Ham	24228	The F. B. Dunn Packing Co., Fairville, St. John Co., N.B.	Vendors.
Ham, Game and Tongue.	24238	The Sussex Packing Co., Ltd., Sussex, N.B.	"
Ham Loaf.....	24232	W. A. Porter, cor. Waterloo and Union Sts., St. John, N.B.	Libby, McNeill & Libby, Chicago, U.S.
Chicken Loaf.....	24234	F. E. Williams Co., Ltd., cor. Princess and Charlotte Sts., St. John, N.B.	Armour & Co., Chicago.
Devilled Ham	24246	W. J. Kent & Co., Water St., Bathurst, N.B.	Libby, McNeill & Libby, Chicago, U.S.
<i>District of Quebec.</i>			
Veal Loaf.....	680	H. Pelletier et frère, St. Raymond, Que.	Armour & Co., Chicago.
Potted Ham.....	683	Edouard Gagnon, Ste. Marie, Beauce, Que.	Turcotte et frère, Que. (Armour & Co.)
Beef Loaf.....	690	L. N. Lavasseur, Fraserville, Que. . . .	Whitehead & Turner, Quebec.
Melrose Paté.....	692	Alf. Lecompte, Fraserville, Que.....	Libby, McNeill & Libby, Chicago.
Chicken, Ham and Tongue.	709	L. N. Bergeron, Quebec.....	Turcotte et frère, Quebec.
<i>District of St. Hyacinthe.</i>			
Devilled Brand Chicken.	407	O. T. Piché, Drummondville, Que. . . .	W. Clark, Montreal.
Potted Tongue.....	409	W. Murry & Co., Sherbrooke, Que.....	"
Chicken Loaf.....	423	Paul Tourigny, Victoriaville, Que.. . .	Libby, McNeill & Libby, Chicago.
Chicken, Ham and Tongue.	416	Victor Trudeau, St. Lambert, Que.....	W. Clark, Montreal.
Potted Ham....	421	Sorel Meat Market, Sorel, Que.....	The Laing Packing and Provision Co., Ltd., Montreal.
Melrose Paté.....	430	W. Beaudry, Valleyfield, Que....	Libby, McNeill & Libby, Chicago.
Veal Loaf.....	431	"	"
Chicken Loaf.....	433	Sorel Meat Market, Sorel, Que. . . .	"
Ham Loaf.....	434	"	"
	436	Alf. Francœur et Cie, Sorel, Que. . . .	"
<i>District of Montreal.</i>			
Chicken, Ham and Tongue.	26782	Wm. Clark, Montreal.....	Vendors.
Chicken Loaf.....	27666	Demers, Fletcher & Co., St. Paul St., Montreal.	Armour Co., Chicago.
Beef Loaf.....	27667	"	"
Ham Loaf.....	27668	"	"
Sausage Meat . . .	27669	Hudon, Orsali & Co., St. Paul St., Montreal.	Libby, McNeill & Libby, Chicago.
Ham Loaf.....	27677	L. Chaput fils & Co., DeBresoles St., Montreal.	"
Chicken Loaf....	27678	"	"
Cottage Loaf.....	27680	"	"

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Name of Sample.	No. of Sample.	Name and Address of Vendor.	Name and Address of Manufacturer or Furnisher.
<i>District of Ottawa.</i>			
Chicken Tamale.....	29309	F. W. Forde, 189 Rideau St., Ottawa..	Libby, McNeill & Libby, Chicago.
Potted Ham... ..	29310	" " " " " "	" " " "
Veal Loaf.....	29311	" " " " " "	" " " "
Potted Ham	29318	J. Bambrick, 50 George St., Ottawa. .	W. Clark, Montreal.
Potted Tongue ...	29319	" " " " " "	Davies, Toronto.
Chicken Loaf.....	29331	R. E. Powell, Wellington St., Ottawa..	W. Clark, Montreal.
Chicken, Ham and Tongue.	29332	" " " " " "	" " " "
Chicken Loaf.....	29337	" " " " " "	Libby, McNeill & Libby, Chicago
Cottage Loaf	29339	" " " " " "	" " " "
Melrose Paté	29341	" " " " " "	" " " "
Chicken Loaf.....	29344	" " " " " "	Armour & Co., Chicago.
Potted Ox Tongue..	29349	Mayberry & Co., Prescott, Ont	" " " "
Beef Loaf.....	29354	J. Culbert, Brockville, Ont.....	" " " "
Potted Beef	29355	Davies & Co., Brockville, Ont ...	Davies & Co., Toronto.
Potted Ham	29356	" " " " " "	" " " "
<i>District of Kingston.</i>			
Beef Loaf	29449	J. P. McKeeny, Port Hope, Ont.....	Libby, McNeill & Libby, Chicago.
Veal Loaf... ..	29452	S. Fount, Main St., Port Hope, Ont. ...	" " " "
Ham Loaf.....	29454	D. Adams, Kent St., Lindsay, Ont ...	Armour, Chicago.
Veal Loaf	29455	" " " " " "	" " " "
Potted Ox Tongue....	29459	A. Primeau, Lindsay, Ont.....	" " " "
Veal Loaf... ..	29463	J. Sutherland, George St., Peterborough	" " " "
<i>District of Toronto.</i>			
Veal Loaf	27618	Green Valley Produce Co., 434 Queen St., Toronto.	Libby, McNeill & Libby, Chicago.
" " " " " "	27619	" " " " " "	Armour & Co., Chicago.
Ham Loaf.....	27620	F. W. Chapman, 530 Yonge St., Toronto	Libby, McNeill & Libby, Chicago.
Potted Ham and Turkey.	27624	H. Tolchard, 518 Yonge St., Toronto ..	Columbia Conserve Co., Indianapolis, U.S.
Ham Loaf.....	27625	F. Patience, 429 Yonge St., Toronto. .	Armour Co., Chicago.
Cottage Loaf	27631	Ebby, Blain Co., Ltd., Front St., Toronto	Libby, McNeill & Libby, Chicago.
Chicken Loaf	27632	" " " " " "	" " " "
Veal Loaf	27604	The Wm. Davies Co., Ltd., Toronto, Ont	Vendors.
Melrose Paté	27609	Michie Co., Ltd., King St. W., Toronto	Libby, McNeill & Libby, Chicago.
Chicken " " " "	27610	" " " " " "	Armour & Co., Kansas City.

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Name of Sample.	No. of Sample.	Name and Address of Vendor.	Name and Address of Manufacturer or Furnisher.
District of London.			
Chicken and Ham....	30097	John Beattie & Co., Seaforth, Ont.	Wm. Clark, Montreal.
Potted Tongue.....	30100	J. W. Smith, Goderich, Ont.	Libby, McNeill & Libby, Chicago.
Libby's Ham Loaf...	30102	Cardino Bros., Seaforth, Ont.....	" "
Ham and Tongue...	30103	Peter Dill, Seaforth, Ont.	Wm. Clark, Montreal.
Potted Tongue	30105	M. H. Killoran, Stratford, Ont.....	Wm. Davies & Co., Toronto.
Potted Beef.	30116	Geo. H. Wairn, Windsor, Ont. ...	Armour Canning Co., Chicago.
District of Manitoba.			
Beef Loaf.	28129	Malkin & Co., Vancouver.....	Wm. Clark, Montreal.
Veal Loaf.	28135	" "	" "
Ham Loaf.....	28138	" "	" "
Chicken Tumble.	28139	" "	Spanish American Food Co., San Francisco, Cal.
Veribest Devilled Ham.	28144	" "	Armour & Co., Chicago.
	28145	" "	Libby & Co., Chicago.
Veal Loaf	28146	" "	" "
Ham Loaf.	28147	" "	Armour & Co., Chicago.

It will, from this, be observed that many of the samples of canned meats described in Bulletin No. 123 contain additions of meal or flour, which, of course, cannot be regarded as adulteration if the fact is indicated by the name of the article. It may be that this is done by the use of the word 'loaf' in a great many instances. But the words 'potted,' 'devilled,' &c., do not justify the addition of flour or corn meal, and articles with such names cannot be regarded as otherwise than adulterated if they have received additions of cereal products. Samples have been collected of the latter, as used in the packing-houses, and the following shows their origin:—

Date of Collection.	Name of Article.	No. of Sample.	Name of Vendor.	Name of Manufacturer.
1906.				
July 19..	Bull Meat Flour.....	27685	Montreal Packing Co., Mill St.	B. Heller Co., Chicago.
	31.. Bologna Sausage Filler	30142	William Davies & Co., Toronto.	
Aug. 1..	Bologna Filler Flour..	30144	Park, Blackwell Co., Toronto	Shaw Milling Co., Toronto.
	2.. Potato Flour.....	30146	F. W. Fearman & Co., Hamilton	Imported from New York.
	2.. Bologna Filler.....	30149	Fowler's Canadian Packers	Wolf, Sayer & Co., Montreal

Examined under the microscope, samples 27685 and 30144 are seen to consist of maize flour, while No. 30142, although consisting mainly of the same product, contains besides some undetermined tissues. Nos. 30146 and 30149 consist almost exclusively of potato starch.

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In accordance with instructions from the Department, dated July 16, samples of bologna and other sausages were obtained for the purpose of subjecting them to the same sort of examination as the canned meats. Many of these, as was anticipated, rapidly underwent decomposition and had to be discarded. Those which actually came under the observation of the analyst will be found described in the table appended to this report, the results stated in which were obtained by Mr. A. Lemoine. The following is a recapitulation of the number of samples examined :—

Inspection District.	No. of Samples Ex- amined.	No. Con- taining Pre- servatives.	No. Containing Dyes.
New Brunswick.	4	0	1
Quebec.....	4	0	0
St. Hyacinthe ..	1	0	1
Montreal ..	8	2	5
Ottawa.....	5	2	2
Kingston ..	2	0	0
Toronto	2	0	0
London.....	3	0	0
British Columbia	3	1	2
	32	5	11

From this it will be seen that of the number of samples of bologna sausages, which escaped decomposition, and whose examination was possible, about one-sixth contained preservatives and about one-third were artificially coloured.

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE.

Chief Analyst.

RESULTS OF EXAMINING SAMPLES OF BOLOGNA SAUSAGES, &c.

DISTRICT OF NEW BRUNSWICK J. C. FERGUSON, INSPECTOR.

Date of Collection.	Nature of Sample	No. of Sample.	Name and Address of Vendor.	Cost.		Inspector's Report.	Condition of Sample.	Preservatives Present.	Artificial Colouring Substances.
				Lbs.	cts.				
1906.									
July 19.	Sausage, Bologna.	24250	John Hopkins, 186 Union St., St. John, N. B.	1½		Taken from stock in store room; no label on package.	Good	None	None.
" 19	"	24251	Lawson Bros., 150 Brussels St., St. John.	1½		Taken from stock in factory; no label on package.	"	"	Present.
" 19	"	24252	J. R. Vanwart, 124 Bridge St., St. John, N. B., North End.	1½		Taken from stock in cold storage; no label on package. In North End, Indian town; old city of Portland	"	"	None.
" 19	Sausage, Bologna, English.	24253	Lilly & Sons, 507 Main St., St. John, N. B., North End.	2		Taken from stock in store Fresh made. No label on package.	"	"	"

DISTRICT OF QUEBEC C. E. ROY, INSPECTOR.

July 17	Sausage	697	Baller Bros. & Sons, Finlay Market, Que.	1½		23 Vendors	Mouldy	None	None.
" 17	"	698	Ed. Begin, Jacques Cartier Hall, Que.	1½		16 J. B. Renaud et Cie, Que.	"	"	"
" 17	"	699	Louis Rheume	2		20 Sylvain	"	"	"
" 17	"	700	R. Ruthman et fils	2		24 Vendors	"	"	"

RESULTS OF EXAMINING SAMPLES OF BOLOGNA SAUSAGES, &c.—Continued.
DISTRICT OF OTTAWA—A. E. SANDERSON, INSPECTOR.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Inspector's Report.	Condition of Sample.	Preservatives Present.	Artificial Colouring Substances.
					Lbs. etc.				
1906.									
July 19	Brawn.	29336	R. E. Powell, Wellington St., Ottawa.	3	75 Cans.	Canadian Packing Co., London, Ont.	Good.	None.	None.
" 20	"	29337	Davies & Co., Brockville Ont.	3	45 Lbs.	Davies & Co., Toronto.	"	"	"
" 20	Bologna (pork)	29358	"	1½	23	"	"	Boric acid.	"
" 20	" (beef).	29359	"	1½	19	"	"	"	Present.
" 25	"	29360	Matthews & Co., Ltd., Hull, Que.	1½	15	Vendors.	"	None.	"

DISTRICT OF TORONTO—T. KIDD, ACTING INSPECTOR.

July 18	Beef Bologna.	30130	Wm. Davies & Co., Ltd., meat packers, Toronto.	1½	23	Vendors	Bought from vendor's clerk, who said it was manufactured at their factory in Toronto; called beef bologna.	None.	None.
" 18	"	30131	Park, Thompson & Co., 139 King St., Toronto, pork packers.	1½	15	Park, Blackwell & Co., packers, Toronto.	Vendor bought from Park, Thompson & Co., packers and curers, Toronto.	"	"

DISTRICT OF LONDON—T. KIDD, INSPECTOR.

July 19	Bologna Sausage	30128	F. W. Freeman & Co., pork packers, Hamilton	1½	15	Vendors	Bought from vendor's clerk and called bologna sausage.	None.	None.
" 19	"	30129	Fowler Canning Co., Hamilton.	1½	15	"	Bought from vendors and is a branch of the Chicago firm.	"	"
Aug. 2	"	30147	F. W. Freeman & Co., packers, Hamilton.	1½	15	"	Bought this from vendor who made same in his factory.	"	"

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DISTRICT OF BRITISH COLUMBIA E. B. PARKINSON, INSPECTOR.

July 17	Bologna Sausage	28169 B. C. Market Co., Van conver.	15	15 Vendors	Home made	Mouldy	None	Present.
17		28170 H. A. Elgett & Co., Van conver.	15	30 Frye, Bruhn & Co., Imported Seattle, Wash.		"	"	"
17		28171 R. Porter & Sons, Van conver.	15	20 Vendors	Home-made	Decomposed		
18		28172 P. Burns & Co., Van conver.	15	20	"	Good	Sulphur ous acid.	None.

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APPENDIX B.**BULLETIN No. 126—FOOD PRESERVATIVES.**

OTTAWA, September 27, 1906.

W. J. GERALD, Esq.,

Deputy Minister of Inland Revenue.

SIR,—It is now some time since you requested me to consider a communication received from a Joint Committee appointed by the Canadian Manufacturers Association and the Society of Chemical Industry, asking the Department to make regulations specifying under the provisions of the Adulteration Act, the limits within which preservatives might be legally used in food. Subsequently you authorized Mr. A. McGill, Assistant Analyst to the Chief Analyst, to attend a meeting of the British Medical Association in Toronto and read a paper on the same subject.

Before any action is taken by the Department or this branch, I believe it would be advisable to give the manufacturers and the public generally an opportunity of becoming fully acquainted with the subject. I beg, therefore, to submit a report by Mr. McGill on Food Preservatives and to recommend its publication in the Bulletin Series of this branch.

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE,

Chief Analyst.

SESSIONAL PAPER No. 14

LABORATORY OF THE INLAND REVENUE DEPARTMENT,

OTTAWA, September 8, 1906.

THOS. MACFARLANE, F.R.S.C., &c.,
Chief Analyst, I.R.D.

SIR,—I have the honour to submit for your approval the following report on the general subject of preservatives in food products. A portion of the matter contained in this report has already been published, in June of last year, with your own sanction and that of the then Acting Deputy Minister. A considerable amount of new material has, however, been added, and the whole may be taken to represent, in epitome, the present state of our knowledge on the subject.

A special incentive to the preparation of this report was the meeting of the British Medical Association in Toronto (August 21 to 25). It is apparent that final conclusions regarding the influence of chemical preservatives upon the public health must be reached through the concerted action of the medical profession. If so influential a body of medical men could be induced to take up this subject a working basis for legislation would soon be established. The Secretary of Agriculture for the United States of America has recently (June 30, 1906) been authorized to obtain opinions from experts in the matter of food preservatives, with a view to legislation, and has issued a circular letter in accordance with this authorization.

I believe that the physician is the proper person to give an opinion in this matter, and that medical health officers, in particular, should be expected to pay attention to it. For this purpose, these officials could obtain the co-operation of local physicians, thus furnishing data of first-class value in guiding legislation. The matter is of so great importance as to demand immediate attention and study. But I would utter a word of caution against impetuous and indiscriminating action. The public press has, for some time, taken up the subject of preservatives in food and treated it in a manner quite hysterical. The desire to create a sensation is too much in evidence. This is a question where judicial calmness is needed. I trust that my attempt to present the subject fairly will assist in arriving at sane and honest conclusions.

I have the honour to be, sir,

Your obedient servant,

A. MCGILL.

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LABORATORY OF THE INLAND REVENUE DEPARTEMENT,

OTTAWA, September 8, 1906.

FOOD PRESERVATIVES.

There has been frequent request, by the interested public, for a note on the subject of food preservatives, which was published with Bulletin 83 (November, 1902). I have thought it worth while to augment this note by additions, which bring the subject-matter down to date. My sketch makes no claim to being exhaustive, but I have reason to believe that no important researches on the physiological effects of preservatives have escaped my attention.

Manufacturers very reasonably ask that the Department of Government which is charged with the administration of the Food Act, should define as clearly as possible its attitude towards the use of preservatives in food. They claim that, without preservatives, their business as packers of meat and fruit products would be destroyed, or at least seriously handicapped. They believe that the chemical substances employed by them are harmless in the quantities used. They wish to use nothing that makes their products unwholesome; they desire to do nothing illegal, and they wish to be definitely instructed as to the conditions under which they may use preservatives and have a guarantee of security against being charged with adulteration under the food laws.

It is inconceivable that legislation in the matter of preservatives in foods should be absolutely prohibitive. Common salt, sugar, vinegar, wood smoke and many other antiseptic substances, whose use goes back further than the memory of man, would have to be excepted. It follows that any laws in this regard must be specifically permissive, *i.e.*, must name the substances which are permitted to be used, or must be specifically prohibitive; whence, by inference, any article not named for prohibition will be regarded as available to the manufacturer until such time as its name is added to the schedule.

Some countries require that the fact of a preservative being used, and its name and amount shall appear on the label. This is good, so far as it goes, but it assumes an amount of knowledge and discrimination on the part of the purchaser which is unreasonable. At the same time I regard it as right and necessary that the presence of a preservative and its name should always be announced on the label, and this for two reasons. First, that the physician may be able to direct the regimen of his patient. Second, that the manufacturer who puts up his goods without a chemical preservative may get due credit.

The manufacturer is naturally desirous to secure cheapness and efficiency in the preservative he uses, and under the term efficiency, I include not only the possession of high antiseptic power, but such qualities as tastelessness, colour, harmlessness to health, &c. The experience of recent years shows that new substances, claiming to possess these characteristics, are being offered from time to time. Is the public to take the risk of testing the harmlessness of such new claimants for favour, or shall we make it illegal to use any new antiseptic until such time as we may feel justified in adding its name to a schedule of substances specifically permitted to be used?

Manufacturers claim that such action would seriously handicap the search for desirable preservatives. The question is worthy of consideration. I must confess that my own opinion is favourable to the making everything of the nature of a food preservative illegal in use, unless specifically permitted. I am aware that under such conditions, many largely used preservatives, such as borax, boracic acid, benzoates, &c., would have stood a poor chance of demonstrating their efficiency and comparative harmlessness. But we are now in possession of a sufficiently large number of effective

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antiseptics to enable us to delay additions to the list until we have had time to make a careful study of the properties of any new substance offered for trial. In other words, we cannot afford to risk a trial which shall involve possible injury to the public health.

I am, for this reason, in favour of *specific permission* in the legalization of preservatives. But this is not enough. The older preservatives, such as salt, vinegar, wood smoke and others, possess decided taste or smell, thus fixing safe limits so far as quantity is concerned, while their comparative inefficiency as antiseptics makes them practically harmless in excess. It is not so with modern antiseptics. These are for the most part devoid of taste and smell; or if bitter (like sodium benzoate), or pungent (like formaldehyde) are so powerful in their germicidal properties that they are effective in quantities too small to be detected by taste or smell. It is quite easy to understand that either through want of knowledge or want of care, a manufacturer may add a harmful dosage of such a preservative, the consumer being unable to judge in the matter. The very potency of our modern preservatives, by virtue of which they can be employed in small amount, is a reason for carefully limiting the amount.

If the two principles which I have laid down be accepted, it remains to make out a schedule of preservatives which may be used in foods. Perhaps it might suffice to include, under a single heading, the *older preservatives*, although this would be open to some lack of definiteness. We might name, for example, as permissible, without percentage limitation—sugar, salt, vinegar, wood smoke, alcohol.

Saltpetre (nitrate of potash), although among the older preservatives, can scarcely be regarded as sufficiently harmless to permit of its employment without limitation, although its taste is so characteristic as practically to fix a limit. There remain to be considered a long series of substances, the most important being: Boracic acid and borax, sulphurous acid and sulphites, benzoic acid and benzoates, salicylic acid and salicylates, hydrofluoric acid and fluorides, silicofluorides, formaldehyde, saccharin, beta-naphthol (hydronaphthol), asaprol (abrostol), hydrogen peroxide, &c.

To whom shall we look for guidance in the matter of deciding what chemical preservatives, if any, may be safely employed and in what amounts?

Chemists have done much to investigate the influence of those substances upon artificial digestion, and upon the properties of the foodstuffs in which they are used. It must be noted, however, that digestion carried out in glass is not identical with the process as carried out in the living body.

Physiologists have accomplished much in the way of investigating the effect of preservatives upon the life processes of the lower animals. The results obtained by biological methods have doubtless great value, but the differences between man and the lower animals are so great as to make necessary very cautious interpretation.

I am convinced that it is to the physician we must look for the final word upon this question. For this reason I had pleasure in bringing the subject to the notice of the British Medical Association at its Toronto meeting in August last. Civic health officers in particular, have opportunity of forming valuable opinions on the subject, and, I believe that upon a matter of so great importance as this one, it would not be difficult to enlist the active sympathy and cordial assistance of every physician.

The notes which follow give a brief account of work done in this field, and it is hoped that their conciseness may make them the more readily acceptable to busy men. Readers desirous of possessing fuller information may refer to original memoirs as indicated.

Official analysts are not to be understood as having any other bias against new methods of preserving food than the general principle that every new thing must be required to show cause for its existence. So far as preserving foodstuffs in wholesome and palatable condition is concerned, we are ready to welcome every innovation which can be proved harmless to health, and effective in that which it proposes to accomplish. Certain methods of preserving foods have been recognized so long and employed so largely, that the safety of using them scarcely comes into question. Such are refrigeration, hermetical sealing *in vacuo* under proper conditions, the smoking of meat, the use of common salt, of vinegar, sugar, alcohol, and other substances. When a new

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thing like borax or formaldehyde, or salicylic acid is offered to the public, we say: Demonstrate unequivocally the harmlessness of this article and we shall be glad to commend its use. We don't question its efficacy as an anti-ferment; that is easily demonstrable. But we know hundreds of chemical substances capable of preventing putrefaction, which we could not dream of recommending for use in foods. And there is such well recognized analogy between ferment action without the human body, and ferment or digestive action within the body, that we should be culpably derelict in duty if we did not insist upon proof of the harmlessness to health of anything which is recognized and recommended as capable of inhibiting putriferous ferment action in food.

I find an inclination on the part of manufacturers and users of preservatives to throw the onus of proof of the harmfulness of these articles upon those who, by virtue of their official position, are compelled to question the safety of using them. The tremendous magnitude of the responsibility resting upon a public analyst is such that he is compelled to proceed deliberately and cautiously. In a very literal sense he is responsible for the physical health of the nation. His hesitancy to concede the safety of an innovation should not be interpreted as due to a desire to hamper great industries, or to put a brake on the wheels of progress. To be anything less than cautious and deliberate would be criminal.

The extensive use of chemical preservatives in perishable foods is one of the most noteworthy features of our time. That the use of antiseptics is very general, is proven by the result of our own experience, and by the various reports issued by the governments of civilized countries, which make official investigation of food and drink sold in the open market.

It is well known (see paragraph 75, Report of the British Food Commissioners, and elsewhere) that quantitative methods for the estimation of preservatives and colouring matters in foods, are far from being perfect. Work is being done in this laboratory, and in all national food laboratories, with a view to perfecting methods of research; and there is little doubt that methods commanding universal acceptance and recognition will soon be available. Meantime, our qualitative processes are above suspicion, and the presence of these antiseptics can be ascertained with absolute certainty in most cases. The following note shows that it is not only the peculiar nature of the foodstuff, which may present difficulties to the analyst, but that manufacturers of preservatives seek, by making these as complex as possible, to hamper the search for them in food.

In November, 1898 (*Analyst*, 1898, 309—), A. C. Chapman, F.I.C., called the attention of the British Society of public analysts to the fact that very complex mixtures were sometimes put on the market as food preservatives. He had found one which contained sulphate of alumina, chloride of sodium, nitrate of sodium, sulphurous acid, chloral hydrate, benzoic acid and iodine, the last probably as hydriodic acid.

Dr. Rideal, in discussion, said that he had met with several such complex preservatives, which he asserted to be almost invariably of French origin, and probably intended to baffle analysts through the introduction of a large number of ingredients.

The extent to which chemical preservatives have come into use is illustrated in a forcible way by the report of A. E. Leach, of the State Board of Health, Massachusetts (*Analyst*, 1901, p. 280). During the summer months of 1898, 1899 and 1900, 5,169 samples of milk were examined for preservatives, and 179 samples, or 3·5 per cent of the whole number were found to contain such. Of this number 142 contained formaldehyde, and 30 contained boracic acid.

In the Report of the Con. Agri. Expt. Stn., for 1899 (p. 139) after a summary of reasons for condemning the widespread use of chemical preservatives in food, occurs the following:—

The Station has secured a considerable number of the advertised preservatives, and these have been qualitatively and as far as possible quantitatively analysed. Results of analysis are as follows:—

'Freezine'—B. Heller & Co., Chicago—A 5·19 per cent solution of formaldehyde.

'Ice-line'—Heller Chemical Co., Chicago—is 1·92 per cent formaldehyde.

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- 'Special M. Preservaline'—A solution of formaldehyde, 1·99 per cent.
- 'Reg Magnus, Snow Flake Brand'—Contains 78·15 per cent boric acid.
- 'Reg Magnus, Pearl Brand'—Contains 95·72 per cent boric acid.
- 'M. Preservaline'—Contains 97·81 per cent boric acid.
- 'BB. Preservaline'—Contains 65·42 per cent boric acid.
- 'Preservaline Butter Powder'—Is merely bi-carbonate of soda.
- 'Cream Albuminoid'—Contains 50·4 per cent boric acid.
- 'Preservaline for Cider'—Is salicylic acid only.
- 'Blue Seal Preservative'—Contains 70·24 per cent salicylic acid.
- 'Forman's Cider Preservative'—An alcoholic solution of beta-naphthol.
- 'Preservite'—Contains 96 per cent benzoate of soda.
- 'Forman's Preservative for Wine'—Contains 36·13 per cent formaldehyde.
- 'Compressed Preserving Powder for Beer'—Contains 49·01 per cent of salicylic acid.
- 'Emken's Preserving Cakes'—Contained 22·09 per cent salicylic acid.
- 'A. Boake Roberts & Co's., K.M.S.'—Tablets containing 84·35 per cent bisulphite.
- 'K.M.S. Preserving Powders'—Contained 25·47 per cent bisulphite.
- 'Reg Magnus, Viandine Brand'—Contained 81·77 per cent boric acid.
- 'Sportsman's Rex'—Same composition as last.
- 'Ocean Wave Brand'—Contained 88·85 per cent boric acid.
- 'A' preservaline for sausages—Contained 68 per cent borax.
- 'Freeze-Em'—Contains 29·19 per cent sulphurous acid.
- 'Maas and Waldstein's Preserving Salts'—Six samples contained from 29·05 to 33·16 per cent boric acid.

Although sold under various trade names it will be noted that the active component in most of these articles is formaldehyde, boric acid, salicylic acid or sulphurous acid. The following list gives further illustration of an apparent desire to disguise the presence of the truly efficient chemical constituent of the preservative:—

J. Kochs.—(Apoth. Ztg.—1905-886 'Oetkers' salicylic acid for the household is a mixture of nearly equal parts of salicylic acid and sugar.

Hydrin.—Schlegel (Bericht der Untersuchungsanstalt Nürnberg, 1904, 45) shows that a preservative sold under this name consists of benzoic acid, milk sugar, common salt and sodium phosphate.

Kölner Pokelsalz.—According to Schaffer (Bericht des Kantons Chemikers Bern, 1901, 9) consists of 62:89 per cent chloride of sodium, with saltpetre, cane sugar and sodium benzoate.

Zeolith with 60·58 per cent common salt, contains fluoride, phosphate and acetate of sodium, and traces of sulphates, and sand and dust.

A preservative for dry milk consists of bicarbonate of soda and benzoic acid.

Macinato di Sansa, a preservative for cattle feed, consists of ground olive stones. Benzoate of sodium and impure saltpetre were sold as preservatives for foods in Basel (1904).

Matthes and Müller (Zeit. für Untersuch. Nahr. and Genussm., 1905-541), discuss a preparation sold as '*Seeths Neues Hacksaltz*,' and highly recommended by the German Butchers' Union. This article consists of sodium benzoate, 20 per cent, sodium phosphate, 75 per cent, and aluminium nitrate, 5 per cent.

Hoffman R. (Apotheker Ztg., 1904, 78). '*Fruktol*' has been put upon the German market, with a certificate from Dr. Lebbin, attesting it to contain no preservative substances forbidden by law. Directions are given to add from 1 to 1½ per cent to fruit juices. *Fruktol* is a 12½ to 13 per cent solution of formic acid, with some sulphuric acid and organic matter, apparently sugar.

'*Werderol*' is a very similar preparation.

Hoffmann finds that 5cc. of official formic acid added to one kilog. of raspberry juice is an efficient preservative.

Baier.—(Bericht des Untersuchungs—Amtes der Landwirtschaftskammer für die Provinz Brandenburg, 1903, 4), *Nadol* is a mixture of benzoic acid and sodium benzoate.

‘*Carnit*’ is an aluminum acetate solution containing sugar and saltpetre.
Matthes & Müller (Bericht des Nahrungsmittel)—Untersuchungsmtes Jena, 1903-4—13). Found preservatives on sale having the following composition:—
Eminent.—Common salt 85, sugar 5, saltpetre 5, spices 5 (chiefly pepper).
Nova.—Commercially pure sodium acetate.
Zeolith.—Sodium fluoride 0·4, sodium phosphate 15, sodium chloride 51, sodium acetate 17, water 16·4 per cent.
Es ist Erreicht.—Saltpetre, common salt and phosphate of soda.
I Conservesalt.—Benzoate of soda, common salt and a little saltpetre.
II Conservesalt.—Sodium benzoate, phosphate, chloride and a trace of saltpetre.
Brilliant Conservesalt.—Sodium of alumina, benzoate and phosphate of soda.
Spice Salt.—Sodium sulphite 6 per cent, and also saltpetre, common salt, paprika, pepper and carraway.
Cassalin.—Sugar, common salt, sulphate of alumina, sodium phosphate and benzoate.
Schwartz, F.—(Jahresbericht des Chemischen Untersuchungsamtes Hannover, 1902, 14)—Found preservatives of the following composition on the market:—

		Per cent.
No. 1.—Starch.. . . .		0·62
Common salt.. . . .		25·79
Boracic acid.. . . .		30·48
Saltpetre.. . . .		39·15
Water.. . . .		3·96
		Grammes per liter.
No. 2.—Aluminiumacetate.. . . .		100
Saltpetre.. . . .		15
Sugar.. . . .		15
No. 3.—Consisted of two fluids and a mixture of salts.		
		Grammes per liter.
I.—Aluminium acetate.. . . .		100
Saltpetre.. . . .		25
Sugar.. . . .		15
II.—Dilute tincture of benzoin salt mixture. Common salt 2 parts; cane sugar 1 part.		
		Per cent.
No. 4.—Common salt.. . . .		22·7
Saltpetre.. . . .		75·7
Sugar.. . . .		1·3
Water.. . . .		0·1

EDWARD POLENSKE (Abstr. Ch. Centralb., 1904, I., 903) has investigated a number of preservatives placed on the German market since the edict of Feb., 1902. The following list is interesting:—

1. *Hackfleischpulver Victoriaröte I*: red pepper, &c.
2. *Secura*: aluminium acetate, basic salts and sugar.
3. *Viandol*: acetic acid, alumina, sugar, nitre.
4. *Carnecons*: acetate of alumina, sugar, saltpetre.
5. *Barmenitpökel*: nitre, common salt, sugar, gypsum.
6. *Wittenberger Pökelsalz*: spices, common salt and nitre.
7. *Einfaches Konservierungssalz*: benzoic acid, common salt, nitre, sugar.
8. *Cervelatwurstsalz*: spices, common salt, nitre, sugar.
9. *Carniform A*: phosphate of soda, common salt and nitre.
10. *Carniform B*: phosphate of soda, nitre, phosphate of lime.
11. *Carnokonservensalz*: sodium acetate, common salt.
12. *Rubrolindauerwurstsalz*: chloride of ammonium and nitre.

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13. *Michels Cassalasalz*: common salt, sodium phosphate, potassium and sodium tartrate, acetate of alumina, sugar and benzoic acid.

14. *Servator*—special milk and butter preservative. Crystallized benzoic acid, boracic acid and common salt.

The most largely used preservatives are probably salicylic acid and boracic acid; but new substances are being added to this list from time to time. Thus sulphurous acid and sulphites, benzoic acid, fluoride of sodium and many other articles of an antiseptic character are quite frequently reported, and according to A. H. Allen (*Analyst*, 1902, 178)—the use of silico-fluoride of sodium as a preservative is patented in England, and the compound is manufactured to a considerable extent at Warrington.

The reckless manner in which patentees and manufacturers of preservatives advertise and recommend their goods, is a source of danger to the public health, which demands attention.

The following extract from the report of the Massachusetts State Board of Health, 1899—p. 614:—

‘The manufacturer of a largely used preservative, known as “Freezine” (which is a weak solution of formaldehyde) issues an attractive pamphlet in which he makes the following remarkable claims. “It is not an adulterant.—It immediately evaporates, so that no trace of it can be found, as soon as it has rendered all the bacteria inert. No chemical analysis can prove its presence in the milk quantitatively or otherwise.” Its use in milk is also claimed by the manufacturer to be beneficial to the health of infants, many of whom have been saved from sickness and even death, he alleges, by a liberal use of “Freezine” in the milk.’

Not only do manufacturers acclaim the safety and benefit resulting from use of their products, but they obtain and publish what purports to be expert evidence in substantiation of their statements. Thus, in 1899, the Preservaline Company of Chicago, New York and San Francisco, issued a pamphlet giving an account of physiological tests made by Doctors Frøhling, Kuhn and Mœchel in Kansas City. These tests were held to prove that milk preserved with ‘Preservaline’ (= solution of formaldehyde) was as nourishing as ordinary milk. Another pamphlet, continuing these tests, was issued in 1901—*i.e.*, one year after the English Parliamentary Committee had recommended ‘that the use of the formaldehyde, or preparations thereof, in foods or drinks, be absolutely prohibited’—and, Dr. Frøhling, after describing the non-interference of preservaline, with amylolytic and proteolytic digestion, concludes as follows: ‘I must say that in all our experiments, we have never found any detrimental effects on the body from the use of preservaline, as prescribed by the company.’

The same company distributes an undated pamphlet by Dr. Randall, health officer of Augusta, Maine, extolling the beneficial effects derived from the use of preservaline (formaldehyde) in the city milk supplies. The doctor uses the following arguments in an appeal along chemical lines:—‘It is made from sugar by peculiar methods of distillation and redistillation....Stopping the development of bacteria by an agent as harmless as sugar, is a step in the direction of pure food,’ and further:—‘The conclusion which has been reached, after a most careful microscopical examination of milk, and a chemical examination of the preservative used, is that it is not harmful but beneficial to the public health.’

National attention in England was drawn to the matter of preservatives in 1897 by the *Lancet*, which issued a circular letter to certain very eminent physicians for the purpose of securing expert opinion on the whole subject.

This circular proposed the following questions:—

1. Is the presence of small quantities of salicylic, boric or benzoic acids or formaline in food, in sufficient quantities to preserve it, injurious to health?
2. Should the use of antiseptics for this purpose be forbidden by law altogether?
3. Should legislation be brought to bear on the restriction of the amount?
4. Should the law insist that when preservatives are used the fact should be stated on the label?

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Sir Henry Thompson wrote that 'he had long held that the addition of antiseptics was undesirable, though unable to produce evidence that any one of them had given rise to deleterious action owing to the impossibility of isolating the precise influence of the drug. He objects strongly to the dietetic use of drugs, and is of opinion that the name and quantity of the antiseptic employed should be on the label, or on a paper setting forth the maker's or vendor's name.'

Dr. Pavy wrote that 'he did not consider our knowledge sufficiently extended to permit of its being taken for granted that no injury is producible, though there is no evidence of injury to health. He points out that it is the vendor, and not the consumer, that is benefited. He considers that, notification of the fact of antiseptics being employed, and their nature and amount would be sufficient, any deviation from the notification should be liable to prosecution. With the public interest thus safeguarded, he thinks that advantage might be taken of the power of antiseptics in preserving articles of food.'

Dr. F. J. Allan points out the possibility of daily accumulation of antiseptics quite sufficient to produce a gradual lowering of the standard of health, and is of opinion that the fact of an antiseptic being added, and its nature, should be required by law to be announced at the time of sale.

Dr. Sims Woodhead draws attention to idiosyncrasy and cumulative effect, and dwells upon our ignorance of the action of certain drugs (*e.g.*, formalin) on food-stuffs. He points out that by the use of preservatives foods of inferior quality may be doctored. He would make use of antiseptics illegal unless their nature and quantity be made known.

The late Sir B. W. Richardson considered that antiseptics are not only necessary at this moment, but when used in proper form and quantity cause no injury whatever. There ought to be a license given permitting a certain, fixed, and not a dangerous quantity of antiseptic, and it ought to be stated on the label what the antiseptic is and its quantity.

Dr. T. Lauder Brunton writes that 'one must remember that poisons are formed in foods by spontaneous decomposition, which may take place after purchase. The question to be decided comes to be whether antiseptics are likely to be more injurious to health than the natural products of decomposition. His own belief is that preservatives are the less injurious. His answers are: (1) The use of antiseptics should not be forbidden by law. (2) It is doubtful whether legislation should restrict the amount, as the makers will probably use the minimum amount found sufficient. (3) The fact of preservatives being used, and their amount, should be stated on the label.'

Sir W. Roberts says that 'there is no reliable information available, and an inquiry is needed.'

Dr. W. D. Halliburton is not able to give information as to injurious effects from his experience, but quotes F. J. Allen as mentioning cases of ill-health in children due to boric acid.

Dr. J. R. Bradbury thinks that 'it is not necessary to forbid antiseptics, but that the amount should either be restricted, or the fact of their addition stated on the label.'

Dr. Whitelegge cannot speak positively, though it is clear to him that the law should insist upon a plain statement on the label if any preservative be added.

I am tempted to make one remark in connection with the report of Dr. Brunton.

The claim that antiseptics should be used in perishable foods because they are less injurious to health than the poisonous products of the spontaneous decomposition of these foods, seems to me quite untenable. The decomposition of food should be a fact of exceptional occurrence, and such food should be rejected altogether; whereas the systematic addition of an antiseptic to food, in order to prevent decomposition, would result in the habitual dietetic use of a powerful drug.

Recognizing the national importance of the problem, a departmental committee was appointed in July, 1899, to report to the British Parliament upon the following subjects:—

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1. Whether the use of such materials (preservatives and colouring matters) or any of them, for the preservation and colouring of food, in certain quantities, is injurious to health, and if so, in what proportions does their use become injurious.

2. To what extent, and in what amounts, are they so used at the present time.

The committee consisted of the Right Honourable Sir H. E. Maxwell, Bart., M.P.; Professor T. E. Thorpe, C.B., D.Sc., F.R.S.; Dr. T. H. Bulstrode and Dr. F. W. Tunnicliffe.

The committee reported to parliament in the following year; and as the evidence taken represents the knowledge of the scientific world upon the subject of preservatives, up to the year 1900, it may be well to make some extracts from the reports as presented. This report together with the minutes of evidence and appendix, forms a closely printed volume of 497 folio pages. From the evidence brought before the committee it would appear that, at the present time, the only artificial or chemical anti-septic agents other than oils, spirits of wine, vinegar, salt, sugar, &c., employed, or said to be employed, in the preservation of food are:—

Boric or boracic acid and borates; so-called ‘boron preservatives.’

Sulphurous acid and sulphites.

Fluorides.

Salicylic acid.

Benzoic acid or benzoates.

Formalin or formaldehyde.

‘As regards fluorides, benzoic acid and the benzoates, it may be said at once that, if employed at all, their use must be extremely limited. Mr. Leonard Boseley, analyst to Messrs. Keiller and Son, Limited, stated that he believed that a firm in London were trying to get benzoate of soda taken up as a preservative for jams.

‘The boron preservatives are generally sold in the form of a white powder (sometimes, however, coloured with a coal tar dye) under a great variety of fanciful names, which as a rule afford no clue to their real nature. They are used largely for dairy produce, for margarine, ham, bacon, sausages and preserved meat foods generally, and to a much smaller extent in beverages.

‘Salicylic acid comes next in the extent to which it is used. It is employed chiefly in beverages and in foods derived from fruit.

‘Formalin, which is of comparatively recent introduction, consists of a 40 per cent solution of formaldehyde in water. The solution is diluted to various strengths, and sold as a preservative for milk chiefly, and to a less extent for other foods.

‘Sulphites are used for very much the same purposes as salicylic acid, especially by brewers. They are also employed by butchers, and to a less extent by game and poultry dealers.

‘As the result of an inquiry among a large number of farmers and dairymen, 110 replies were received, and 65 of these admitted the use of preservatives.

‘Of 4,251 food samples examined for the committee in the government laboratory, 1,659 samples (=39 per cent) were found to contain preservatives, as follows:—

Boric acid.. . . .	1,247 samples.
Salicylic.. . . .	320 “
Formalin.. . . .	20 “
Sulphites.. . . .	143 “

(71 samples were found to contain two preservatives of different kinds.)—

Of 290 samples of cream.. . .	77·9 per cent contained preservatives.
“ 364 “ butter.. . .	57·1 “ “
“ 210 “ bacon.. . .	70·5 “ “
“ 185 “ ham... . .	82·7 “ “
“ 226 “ sausages.. . .	66·4 “ “
“ 48 pork pies.. . . .	70·8 “ “
“ 150 samples jam.. . . .	44·0 “ “
“ 78 “ lime and lemon juice	88·5 “ “
“ 769 “ temperance drinks. ...	26·1 “ “
“ 100 “ imported beers....	39·0 “ “

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A comparison of the percentages of preservatised foods in the poorer districts and the wealthier districts of London, respectively, shows that they are practically identical, being 42·9 per cent in the former and 43·4 per cent in the latter.

Preservatives are extensively used in certain foods imported into the United Kingdom from the colonies and foreign countries, especially in butter from Australia, in ham and bacon from Canada, and in butter and margarine from France, Holland and Belgium.

Of the temperance beverages received from all parts of the United Kingdom, 83·5 per cent of those sold as temperance 'wines' and cordials, contained preservatives, chiefly salicylic acid, and to a less extent sulphites.

With regard to the amount of the several preservatives, it appears that the boric acid in the milks varied from 1·3 to 9·1 grains per pint; in cream from 10 to 57 grains per pint; in sausages, potted meats and brawn, from 15 to 66 grains per pound; in butter from 18 to 65 grains per pound; in bacon from 8·6 to 46 grains per pound. The amount of calicylic acid in jams varied from 1·7 to 8·5 grains per pound; in temperance drinks and cordials from 1·5 to 19 grains per pint; in herb beers and similar beverages from 0·5 to 8·1 grains per pint; and in imported beers from 1·3 to 3·4 grains per pint. Sulphites were found to be contained in lime juice, ginger wine, lemon syrup, raspberry and peppermint cordial in amount (estimated as sulphur dioxide varying from 0·1 grain to 4·5 grains per pint.

Mr. Vasey, who has been employed for upwards of ten years to examine foods and beverages on behalf of the *Lancet*, stated that he had found boric acid in meat peptone and beef jelly intended for invalid use, and that practically all the samples of invalid foods which he had occasion to analyse contained chemical preservatives.

Dr. Vœlcker testified from personal observation, to the casual and haphazard manner in which both farmers and vendors add preservatives to milk.

The report continued as follows:—

Convinced as we are of the very general and increasing use of chemical preservatives by traders in the more perishable articles of food, we desire now to focus the evidence which has been placed before the committee, as to whether such preservatives may be expected to be attended with any risk to the public health.

The evidence given before the committee bearing on this question may be classified as that of:

- A. The public analyst.
- B. The medical officer of health.
- C. The physician and surgeon.
- D. The physiologist and pharmacologist.

A.—THE EVIDENCE OF THE PUBLIC ANALYST.

1. Prosecutions have exercised an inhibiting effect upon the use of preservatives.
2. Maximum amounts found must be regarded as exceptional and unnecessary, yet there is no guarantee that such excessive amounts may not continue to be used.
3. With regard to the precision with which limits could be determined, there was some difference of opinion; and as regards formalin, the evidence was unanimous that the estimation of such minute quantities as may be present in foods, is attended with great difficulty.
4. As to colouring matters the general testimony was to the effect that the nature and amounts of the substances in general use at the present time is such that but little danger is likely to accrue to the public health therefrom.

B.—THE EVIDENCE OF THE MEDICAL OFFICER OF HEALTH.

1. The medical officers of health were practically unanimous in their opinion that all preservatives should be prohibited in milk.

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2. They saw danger in the unknown administration of drugs in morbid conditions of the body; and pointed out that such drugs are used at times, in amounts far in excess of those sanctioned by the B.P.

3. When more attention is paid by medical men to the use of preservatives, obscure conditions, such as indigestion, malaise, faintness, &c., which at present receive no adequate explanation, may be made clear.

C.—THE EVIDENCE OF THE PHYSICIAN AND SURGEON.

1. Was not very conclusive, and it is evident that the question of food preservatives had not, at the time of inquiry, received special consideration by the medical profession.

2. Dr. Anderson had found that daily doses of 10 to 20 grains of boracic acid is generally followed by dyspepsia 'sufficiently pronounced to make life miserable while it lasts, and at times it causes distinct gastritis, with repeated vomiting.'

Sir Lauder Brunton considered that boracic acid was capable of exercising an injurious effect upon pregnant women.

3. On the other hand, an assistant physician at the London hospital described extended experiments as to the effects of borax and boracic acid upon himself, which resulted in 'no sort of stomach irritation or intestinal irritation or trouble, or anything of that sort at all.'

The consulting surgeon to Westminster hospital had administered borax to hundreds of patients in doses of 10 grains, 3 times a day, and up to 40 grains a day, and never found any evil or unpleasant effects, except in those patients who having kidney disease could not void the drug readily.

4. In so far, however, as expression of opinion went, the profession was almost unanimous in its condemnation of the present unrestricted use of preservatives. The medical profession was clearly impressed with the importance of at least intimating by a system of labelling, the nature, and when practicable, the amount of the preservative used. In the opinion of Sir Lauder Brunton and other witnesses, it is a serious matter that a medical man should prescribe a daily dose of any drug to a patient who may, unknown to himself and the physician, be consuming an indefinite quantity of the same drug in his food. He also pointed out that by the indiscriminate employment of drugs there was a possible danger that the action of certain drugs might be, if not entirely nullified, at least reduced in effect.

5. There was, however, another aspect of the question to which certain witnesses referred. They were of opinion that there are certain conditions of the human economy in which the administration of drugs, such as boracic acid and salicylic acid, are held to be contra-indicated. Among such conditions, specific reference was made to inflammatory states of the digestive tract, and of the reproductive organs.

D.—EVIDENCE OF THE PHYSIOLOGIST AND THE PHARMACOLOGIST.

1. All these witnesses strongly deprecated the unregulated use of preservatives, at least those at present known, and of any colouring matter having a possible deleterious effect upon the human system; and were generally agreed that formic aldehyde was a dangerous substance, even in very dilute solution.

2. An opinion inimical to the use of preservatives was also held by some of these witnesses on the ground that these substances were added to food for the purpose of destroying or preventing the development therein of living organisms, and hence that these same substances when introduced into the highly organized animal, could not behave indifferently to living matter, but must also tend to exert upon it some influence. Especially, they maintained, was this the case since the secretion of the digestive juices was dependent upon the activity of cells not differing sufficiently from micro-organisms to render it probable that substances affecting deleteriously the one would be indifferent to the other.

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3. Other objections offered by the physiologists applied especially to one preservative, viz., formalin, and were based upon the fact that this substance actually enters into combination with the proteid constituents of the food, the compound formed being less digestible than the original substance, thereby entailing a nutritive loss to the consumer.

4. Other witnesses testified to the value of chemical preservatives in protecting consumers from the evils of tainted or decomposing food. One witness said that in his opinion the use of preservatives, even in milk, under certain conditions, was in the public interest.

5. Dr. Attfield found, from experiments upon himself, that pharmacopœial doses of boric acid taken with his meals, had no appreciable action upon the digestion of his food. He found also that salicylic acid didn't interfere with digestion.

6. Experiments on digestion in glass vessels were concerned with formic aldehyde, borax and boracic acid. Speaking generally, the results of these experiments may be regarded as showing that each of these substances had a retarding effect upon certain digestions; this amounting in the case of strong solutions of formaldehyde, to marked inhibition.

7. Experiments on animals (kittens) gave contradictory results.

8. The evidence was contradictory as to the harmfulness of copper 'greening' in peas and other vegetables.

The general conclusions of the committee are contained in the paragraphs numbered 103 to 135 of the report to Parliament, and are exceedingly interesting and important.

Upon these conclusions are based the following recommendations:—

RECOMMENDATIONS.

(a.) That the use of formaldehyde or formalin, or preparations thereof, in foods or drinks, be absolutely prohibited, and that salicylic acid be not used in a greater proportion than 1 grain per pint in liquid food, and 1 grain per pound in solid food. Its presence in all cases to be declared.

(b.) That the use of any preservative or colouring matter whatever in milk offered for sale in the United Kingdom be constituted an offence under the Sale of Food and Drugs Acts.

(c.) That the only preservative which it shall be lawful to use in cream be boric acid, or mixtures of boric acid and borax, and in amount not exceeding 0·25 per cent expressed as boric acid. The amount of such preservative to be notified by a label upon the vessel.

(d.) That the only preservative permitted to be used in butter and margarine be boric acid or mixtures of boric acid and borax, to be used in proportions not exceeding 0·5 per cent, expressed as boric acid.

(e.) That in the case of all dietetic preparations intended for the use of invalids or infants, chemical preservatives of all kinds be prohibited.

(f.) That the use of copper salts in the so-called 'greening' of preserved fruits be prohibited.

(g.) That means be provided either by the establishment of a separate court of reference or by the imposition of more direct obligation on the local government board to exercise supervision over the use of preservatives and colouring matter in foods, and to prepare schedules of such as may be considered inimical to the public health.

Dr. Tunnicliffe, while agreeing on all other points, took exception to the prohibition of the use of copper in colouring vegetables, holding that in a proportion not exceeding half a grain of metallic copper per pound the presence of copper is quite harmless.

The evidence heard before the committee was concluded May 14, 1900, and it may be safely regarded as a full statement of the case to that date.

In the abstracts which follow I have sought to give an account of work done upon this subject since the date mentioned, and, in a few cases, to do this for important work which was not brought to the notice of the committee.

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BORAX AND BORACIC ACID.

The antiseptic property of boric acid was noted by Jacquez in 1856, and he employed it in preserving the bodies of rabbits by immersion in a 5 per cent solution. Its use as a food preservative did not become general until about 1880, since which time it has steadily increased.

From 'A Second Treatise on the Effects of Borax and Boracic Acid on the Human System,' by Dr. O. Liebreich (published by T. A. A. Churchill, London, in 1902) we learn: (1) The first boron preservative for meat and milk in Germany was the so-called 'Aseptine,' 1870. There are now (1902) a large number of boron preservatives on the German market. (2) Boron preservatives were known in Belgium as early as 1867, and a 'Milk Extract,' containing borax, existed as early as 1861. (3) Hager even asserts that the preservative quality of borax for milk is 'an old and well-known fact.'

The great international discussion which has arisen over the use of boric acid and its salts as preservatives for food seems to have been inaugurated by a treatise written by Dr. Oscar Liebreich, of Berlin University, and first privately printed in 1899. A translation of this paper has been published in England by Messrs. Churchill, under the title, 'Effects of Borax and Boracic Acid.' Dr. Liebreich holds that borax and boracic acid, as used for preserving foodstuffs, and especially meat foods, are practically harmless.

In a later publication ('Second Treatise on the Effects of Borax and Boric Acid on the Human System,' 1902: J. & A. Churchill, London), Dr. Liebreich hints at the conditions under which he was led to make a special study of borax. 'My first investigation into the use of borax and boracic acid as a food preservative was made at the instigation of Professor Virchow. The question arose whether fish caught in deep-sea fishing and preserved with borax and boric acid was injurious to health. I was able without the further proofs being published—since the innocuousness of the substance was already generally known at that time—to give my opinion that the fish might be eaten without hesitation, and this was acted on very freely during eight to fourteen days.'

The opinion seems to have been given off-hand, in Dr. Liebreich's capacity as *Medizinalrat*, and to have been based upon then known physiological properties of borax and boric acid. Dr. Liebreich adds: 'Subsequently representatives of the chemical industry desired me to express an opinion. I undertook to comply with this request, since the question was also of extensive scientific interest, on condition that any unfavourable data which might be contained in my report should be published equally with the favourable results. I may further remark that the chemical industry did not require an expert's opinion with the object of trying, under any circumstances, to maintain the right of refining borax for food preservative purposes, but in order to decide whether the manufacture and sale of boron compounds might be continued without injury to the consumers.'

This very candid and satisfying explanation of the conditions under which Dr. Liebreich took up the study of borax and pursued such study, I have thought right to quote in his own words, because his conclusions form by much the most important element in justification of the world-wide use of boron compounds in food; and, further, because Dr. Liebreich's work is the first important contribution to the scientific study of boron compounds as preservatives, but must not be understood as a final deliverance on the subject. The matter was first brought to Dr. Liebreich's notice professionally; and his professional utterance as to the harmlessness of borax in curing fish, led to his being retained by the 'chemical industry.' For this industry he carried out elaborate and painstaking investigation, which appears to have partaken of combined professional and scientific characters. The professor did not hold a brief for his clients, but insisted that unfavourable data found by him should be published equally with favourable data.

In the second treatise, a pamphlet of 87 pages, Dr. Liebreich first occupies himself with criticising certain statements of Dr. Robinson, made in 'Public Health,' August, 1899, and ascribing to boric acid the illness of five people who had eaten 'blanc-

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mange,' made with borated milk. Five out of nine fowls fed with the same 'blanc-mange' died. Dr. Kister (*Zeits. für Hygiène u. Infektions-Krankheiten*, 1901—229) repeated borax experiments on fowls; and although he concludes that Dr. Robinson was too hasty in ascribing the illness to borax, he adds: 'After the result of the experiments, I cannot but be of the opinion that boric acid, even when not taken in immoderately large doses, may have an injurious effect on healthy adults when continually used. I am justified in this conclusion by the discovery of albumen in the urine of two healthy persons after they had taken boracic acid several times.'

After some criticism of Dr. Kister's work and report, and very full description of work carried out by himself on rabbits, Dr. Liebreich concludes: 'From these experiments on animals may be deduced that borax is entirely innocuous as regards the functions of the kidneys.' He further administered borax to patients, and says: 'The above named investigations offer a further proof that borax and boric acid are substances which cause no injury to health when judiciously used.'

Meantime (February 18, 1902) boric acid and its salts were added to the list of articles forbidden to be used in foods under the German law of June, 1900. In an appendix to the second treatise, Dr. Liebreich criticises the technical argument which was held to justify the proscription of boric acid and its salts. The character of the argument in question may be gathered from the following excerpts, which are taken from the *Zeit. für Untersuch. der. Nahr., and Genussmittel*, 1902, 678-682 (through 'Analyst,' 1902, 271).

E. Rost 'As the antiseptic action of boric acid is small, comparatively large quantities are necessary to preserve articles of food, and it is quite possible for a person to take as much as 3 grammes daily in his ordinary food. Meats, sausages, milk, butter, margarine, white and yolk of egg, fish, caviare, shellfish, &c., are frequently preserved by the action of boric acid. The author found 3.87 per cent in dry salt meat and 2.8 per cent in shrimps. Boron compounds are stated to have no specific action on the enzymes of the stomach and intestines, except as regards their acid or alkaline properties. Borax retards to a small extent the coagulation of milk by rennet; the addition of borax to milk, especially when the latter is intended for infant's food, is therefore injurious. Large doses were found to cause local irritation and inflammation in dogs, cats and rabbits, and also affected the action of the bowels. In two experiments on men it was found that doses of 1, 2 and 3 grammes of boric acid retarded the assimilation of albuminoids, the nitrogen contents of their urine being determined hourly before and after taking the boric acid. By taking the temperature of various dogs fed on borated meat, it was demonstrated that assimilation of the food was delayed. Experiments on other dogs showed that only large doses caused a loss of corpuscular albuminoids. It may be here mentioned that no essential difference was noticed between the action of boric acid and borax. A striking loss of weight in the animals was noticed. As this was not due to destruction of albumen or loss of water, it must be put down to oxidation of fat. Apparent increase in the digestion of albumen, shown when very large doses of borax were given, was due to the 'salt' action of the borax, similar results being exhibited by large doses of common salt and potassium nitrate. A large consumption of water prevented these effects.

'Assimilation experiments in the presence of boric acid were carried out on four assistants. During a preliminary period of 5 to 17 days the men were brought into a state of 'nitrogen equilibrium' followed by administration of boric acid (3 grammes per diem) for 12 days. Two of the men then, for a time received no boric acid, and afterwards underwent a second treatment. Finally, some days were devoted to studying the after symptoms of the experiment. Two of the men showed a loss of weight due to loss of fat. The final observations also showed less secretion of urine and absorption of food materials. The two other assistants also showed a loss of weight. These two latter were also chosen for Rubner's experiments (see below) in which the amounts of expired carbon dioxide and water were determined. One of them diminished so suddenly in weight after taking 3 grammes of boric acid daily, that the experiment had to be discontinued. The weight of the other also decreased, but increased when the boric acid was discontinued, and fell again when the latter was readministered. It was not

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demonstrated by the above experiments that boric acid affected the appetite. No influence upon health and appetite were noticeable. Boric acid was not found by the author to influence the temperature, blood pressure or kidneys. As the elimination of boric acid by the urine takes from 8 to 14 days, its action is probably cumulative. The author comes to the conclusion that the use of boron compound in food should be forbidden.'

RUBNER.—According to the author, who comes to the conclusion after numerous experiments, boric acid has an important latent action on the digestive process. Not only the digestive organs themselves, but the whole alimentation is affected. The change produced, which may amount to a loss of 22 per cent energy and 30 per cent of the utilization of nitrogen free food, is a very important fact, and undoubtedly means injury to health, as the amount of fat in the body may be of the greatest importance, and the reduction of the fat must be followed by a rapid fall in albuminoids. Serious results may follow in infant feeding, to invalids, old people or convalescents by borated foods.

R. O. NEUMANN.—The experiments carried out by the writer on himself consisted of a preliminary period of 4 days, during which various observations were taken; then 10 days with daily doses of 3 grammes of borax, followed by 4 days without borax, and concluding with daily doses of 5 grammes of borax for 3 days. During the first period nitrogen equilibrium existed; the secretion of nitrogen decreased during the first borax treatment, also in the intermediate 4 days, but was not further diminished by the larger doses of borax. His weight fell 1,200 grammes in seven days of the borax period. The flow of urine was somewhat increased, and boric acid could be detected for 18 days after the last dose of borax had been taken.

A. HEFFTER made four series of experiments on himself, alternately fasting for 18 to 20 hours, and then feeding on milk and eggs for 48 hours. In two of the series he used food without borax, in the other two he used 1 and 4 grammes borax daily. The boric acid was found to increase the solids and nitrogen in the excreta, probably due to the diminished absorption of albuminoids as a result of the injurious effect of the boric acid on the mucous membrane of the intestines. The conclusion is that boric acid is not without objection when used as a preservative.

G. SONTAG found by experiment that 3-gramme doses of boric acid required 5, 8 and 9 days, respectively, for elimination by the urine, in the cases of three healthy individuals.

E. POLENSKI showed experimentally that flesh and smoked hams, when packed in borax, dry, for periods of three and four weeks, absorbed into the interior of the ham quantities of borax varying from 0.076 to 4.05 per cent.

Dr. LIEBREICH criticises with something of the attitude of special pleading, most of the evidence brought forward by the scientific men above quoted, and, although Dr. Rost says: 'A deceasing effect on the assimilation of albuminous food in the intestine is peculiar to boron compounds, showing itself with even small quantities (0.5 grammes)' Dr. Liebreich concludes: 'Every day of the diet without boric acid, the condition of absorption in the intestine became worse, in consequence of unsuitable food, and according to these (Dr. Rost's) experiments, boric acid produces a favourable effect on the absorbing capacity of the intestine.' I don't know of a better example of the proverbial disagreement of doctors than this. Again, in contradiction to a statement by Dr. Rosé—that borax caused inflammation of the mucous membrane—Dr. Liebreich asserts: 'Boron preparation are not only comparatively but *absolutely* harmless to the mucous membrane.'

A critical essay on the subject of 'The Preservation and Colouring of Meat Produce,' was published in Berlin, 1901, by Dr. George Lebbin, chemist to the Royal Prussian Ministry of War, and contains an introductory preface by Dr. Liebreich. This essay contains nothing original and may be fairly described as a setting forth of the subject-matter in the interest of the trade. That the trade recognizes this fact is shown by the republication of portions of Dr. Lebbin's essay in the form of a fly-leaf, in translation form 'Die Medicinische Woche,' of September 23, 1901. In the course of his paper Dr. Lebbin states, 'Although I consider that the above experi-

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ments (Pfeiffer's) have already settled the question in favour of the meat dealers, I have, nevertheless, begun experiments which are being carried out with meat prepared in the usual way and with the normal doses. For this purpose I have secured the co-operation of a medical man as well as of an official meat expert.' I have not, up to this time, obtained any account of the experiments referred to.

A very full account of Dr. Liebreich's work has been written for 'American Medicine,' March 15, 1902, by Drs. Vaughan and Veenboer of the University of Michigan; these authors refer to other authorities favourable to the use of boron compounds. This paper has been reprinted and widely distributed in the interest of the trade.

II. LEFFMAN (Journ. Franklin Institute, 1899, 97. Through 'The Analyst,' 1899, 102.

From the results of a large number of experiments on the artificial digestion of arrowfoot starch, the author concludes that 'beta-naphthol is injurious to malt-dias-tase, but does not seriously affect the starch-converting capacity of taka-dias-tase or pancreatic extract. Boric acid, borax and boroglyceride, interfere but little with either starch or proteid digestion. Salicylic acid interferes with the action of most of the enzymes, especially those that convert starch, but does not seriously affect proteid digestion. Sodium benzoate has no appreciably injurious influence on any of the enzymes. Sodium fluoride interferes but little with the digestion of starch, but sodium silico-fluoride has a considerable influence on pancreatic extract.

In his opinion, if the use of any preservative is to be permitted in food, boric acid and sodium benzoate are the least objectionable since they appear to have less tendency to disturb the digestive functions than the other preservatives commonly employed.

The following medical testimony regarding the use of milk containing preservatives was given in a case brought before the English courts, and is reported from the *British Food Journal*, 1901, p. 110.

Dr. CHARLES JACKSON, medical officer of health for Fulham, 'had seen cases where children using milk containing boracic acid, exhibited serious digestive disturbances.'

Dr. L. B. DIPLOCK said, 'four years ago he attended a large number of children suffering from marasmus, and on testing the milk with which they were fed, he found in each case that it contained boracic acid. Upon the infant being fed on pure milk direct from the cow, they recovered without the aid of any medicine, yet before he discovered the cause of the symptoms several of the infants died.'

A collection of medical and scientific data favourable to the use of boron preservatives is published by Perkins, Bacon & Co., London. It is undated, and without any signed editorial introduction. It seems reasonable to infer that this pamphlet is issued by persons interested in the use of borax and boracic acid. It includes statements by Dr. Redwood, Dr. Chittenden, de Cyon, Bussy, Gavarret, Wurtz, Dr. Bell and others.

By far the most important contribution to the subject of boron preservatives which has been made since 1902, is Dr. W. M. Wiley's account of actual feeding experiments, carried out under strict scientific supervision at Washington in 1902 and 1903. The detailed account of this investigation is contained in Bull. 84, part 1 of the Bureau of Chemistry. It forms a volume of 477 pages, and bears evidence throughout of the extreme care with which the research was prosecuted. At the time of its inauguration, my friend, Dr. W. D. Bigelow, wrote me as follows:—

'The experiment is being undertaken very seriously and on a somewhat extensive scale. In fact, we consider it the most important inquiry we shall have on hand this year. About a dozen men, almost all from the Department of Agriculture, have volunteered, and will be divided into two equal lots, one of which will eat preserved food, while the other will receive only food that is known to be pure. The conditions will be controlled as carefully as possible, and the presence of nitrogen, phosphoric acid, and energy expressed as heat of combustion, will be determined. The preservative used will be determined in the food, as well as in the excrement and urine, and careful observations will be made daily regarding the physical conditions of the men. A 'clinical

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sheet' will be kept for each man. The work will be very similar to that recently conducted by the Imperial Health Office at Berlin, but will be more extensive, and will also differ from it in the fact that we shall employ largely young men of scientific training instead of labourers. We are just entering upon this work now. The first table will be started the beginning of next week, and the analytical work will begin early in December.'

The investigation, as reported in June, 1904, dealt solely with boron preservatives. It would be futile to attempt any extended sketch of the methods and progress of the experiment. The following sentences sum up Dr. Wiley's conclusions:—'On the whole, the results show that one-half gram per day is too much for the normal man to receive regularly. On the other hand, it is evident that the normal man can receive one-half gram per day of boric acid, or of borax expressed in terms of boric acid, for a limited period of time, without much danger of impairment of health. * * * 'It appears, therefore, that both boric acid and borax, when continuously administered in small doses for a long period, or when given in large quantities for a short period, create disturbances of appetite, of digestion and of health.'

Critical notices of Dr. Wiley's work will be found in the *Chemiker Zeitung*, 1905—194 (Breicht über die Wileysche Arbeit, A. Kraus); and 1906, 10 Jan.—(Versuche über den Einfluss von Borsäure und Borax auf den menschlichen Organismus,—Dr. L. Spiegel).

LEO. GOLDSMITH (thesis for B. Sc. degree. Abstract of Prof. Mayberry in *Jour. Am. Ch. Soc.*, 1897, p. 889) made several series of experiments on the digestion of blood fibrin in presence of alum, boric acid and formalin. The results are summarized as follows:—'While all the substances tested show some influence on the digestive action of pepsin, only alum exhibits a marked effect.'

CH. HARRINGTON (*Am. Jour. of the Medical Sciences*, Sept., 1904—Through *Zeit. f. Untersuch. der Nahr. und Genussmittel*—1905.) Seven cats were fed, from 442 to 133 days, with similar food, containing doses of 0.544 to 0.857 gms. borax. One cat died. In all the kidneys were affected, least so in the animal which got least borax. Deterioration of the epithelial lining of the tubuli uriniferi and increase of fat (fatty degeneration) were observed. Some of the tubuli were filled with epithelial cylinders.

Bassenge (*Zeit. Exper. Pathol. und Therap.* 1905, 113) found that 2 per cent of boracic acid did not hinder the development of pathogenic bacteria in flesh.

Rost, B. (*Arch. internat. Pharmacodyn., Therap.*, 1905, 291), concludes a very exhaustive series of experiments regarding the excretion of boric acid in the words:—'Practically the whole of the ingested boric acid is eliminated by the kidneys.'

LIEBREICH (*Therap. Monatsh.*, 1904-416) finds that a certain amount of boric acid is got rid of through the skin, and quotes Wiley to the same effect.

There is, however, no room to doubt that the statements of Rost, as to elimination of boric acid, are essentially correct. The chief portion, in most cases, nearly the whole of the boric acid is eliminated by the kidneys.

DR. VON RAMNER (*Zeits. f. Untersuch. Nahr. & Genussm.*, 1905, 405) points out the difficulty of carrying out the German law regarding boric acid in meat products, in face of the strong convictions of experts who believe it to be harmless. He also demonstrates the impossibility of carrying out the law in its prohibition of alkaline earth hydroxides and carbonates.

FORMALDEHYDE.

This preservative is specially condemned by the English Parliamentary Commission of 1900. It is, therefore, scarcely necessary to consider it as a competitor for public approval. The following work done on it may, however, be put on record.

WALDEMAR KOCH (*Am. Jour. Physiol.*, 325). The action of formaldehyde does not depend on active oxygen. Yeast made to grow anaerobically is killed by it in 0.05 per cent solutions, but in 0.005 per cent solutions is unaffected. In cases of tryptic digestion, where the presence of formaldehyde has been observed to interfere with digestion, the reason may be discovered in the fact that the formaldehyde acts upon the proteids and renders them indigestible.

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A. TRILLAT (Comptes Rendus de Chimie, 1904—720) shows that formalin hinders the digestibility of milk, and that it remains as formaldehyde in milk, so long as the milk remains unaltered.

A new method of using formaldehyde has been patented in France (Pat. 342769) by Budde (Jour. Soc. Chem., Indust., 1904—947). This consists in sterilizing the food with a 0·005 per cent solution of formaldehyde, and then treating with a 0·025 per cent solution of hydrogen peroxide. It is claimed that, in this way, fish, milk and meat can be sterilized without heat, and their characteristic flavours preserved.

A. FÖLSING—Eng. Patent, 13689, 1904 (Jour. Soc. Ch. Indust., 1904—878)—has been granted a patent for the use of tri-oxymethylene as a preservative for meat, fish, butter, jams, &c., used either as a powder or in solution. Oxymethylene in solution would be nothing else than formaldehyde, and in the solid state it is a polymer of formaldehyde, so that this patent must be regarded as merely an attempt to use formaldehyde under a new name.

The same remark may be made regarding a recommendation of G. Marpmann, (Chem. Centralb., 1904, I 687) to the effect that 0·5 per cent to 1·0 per cent of Hexamethylenetetramine is an efficient and harmless preservative for milk. This substance is a derivative of formaldehyde, sometimes used as a drug under the name *formin*.

F. MALLMAN (Zeit. für offentl. ch. 10-165), describes a new preservative sold under the name 'Sterilisol' which consists essentially of formaldehyde and common salt.

KARL ASCHOFF (op. cit.,—10-181) shows that a 2 per cent solution of di-thionate of soda is sold under the same name.

The efficiency and convenience of formaldehyde as a preservative are so well recognized that it need not surprise us if it continue to be used, specially for milk and non-alcoholic or weakly alcoholic liquors.

The question arises, may the use of formalin as a disinfectant and cleanser be permitted? I know of milk companies who use formalin in rinsing out the tin cans which are sent out to bring the farm milks. These cans are all thoroughly washed, scrubbed and scalded, but it is claimed that in spite of these precautions, a stale odour remains and taints the fresh milk. To prevent this the cans are sent out with a small quantity of a solution of formalin in them. This, the farmers are instructed to throw out before filling them with new milk. Of course there is a strong temptation, especially in warm weather, to ignore such instructions. It would be of considerable interest to obtain a general expression of opinion among dairymen on this subject.

ERNST LÖWENSTEIN.—Zeit. für Hygg.—48-238, through Chem. Centralb.—1905-893.

Formalin solutions, of such strength as are used for milk preservation, cause the milk to be so altered as not to react with rennet. The degree of change is dependent rather on the time during which the formalin acts, than upon its amount. Gaseous formaldehyde acts more energetically in this way than do solutions.

LIEBREICH (Therap. Monatsh., 1904-59) considers the question of using formalin as recommended by V. Behring, for the 8-day preservation of unboiled milk, in proportion of 1:5000. He contends that experiments in which large amounts of formaldehyde are used, prove nothing as regards the healthfulness of formaldehyde, in minute amount as recommended by V. Behring. The former employ the *disinfectant power* of the reagent, while the latter make use of its *restraining power* (Erhaltende Kraft.) Dr. Liebrich holds that the prohibition of formalin in meat does not make its use in milk illegal.

CHESTER & BROWN (Bull. 71—Del. Agr. Expt. Ston.) conclude, as the result of extended experiment, that the addition of formaldehyde to milk in amount not exceeding 1 part in 40,000 and the holding of the milk at temperatures between 60° and 70° Fah. will improve its sanitary quality by preventing rapid and objectionable fermentations, and there is no reason to believe that in this proportion any marked injury could result to the person consuming it.

Bassenge (Zeit. Exper. Pathol. und Therap. 1905, 113) found that 2 per cent of dish 320 mgr. of formaldehyde. Sugar gave 700 mgr, per kilog. and in presence of

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Thus, 1 kilog, of fire wood, burned in glass gave 27, in copper 1,800, and in ordinary dish 320 mgr, of formaldehyde. Sugar gave 700 mgr. per kilog, and in presence of copper gauze 5,760 mgr. Smoke was shown to have a germicidal effect on various kind of bacteria. The use of smoke for preserving meats was shown to be dependent on formaldehyde, together with creosote, &c.

SALICYLIC ACID.

(The following note is taken from Year Book, Department of Agriculture, at Washington, p. 557):—

‘In 1874 Kolbe was led, by the readiness with which salicylic acid is converted into carbolic acid, to investigate the antiseptic properties of the former. The perfection of Kolbe’s method of manufacturing salicylic acid greatly cheapened the product, and led to vigorous efforts to extend its use. During the first three or four years immediately following the discovery of its antiseptic properties, and before its physiological action was understood, a number of prominent chemists warmly advocated it as a food preservative. It gained in favour at first, and its use increased rapidly till 1880. In that year 110,000 pounds were used in France for the preservation of food.

Since 1880, the mass of evidence resulting from physiological studies with salicylic acid, tends to condemn the addition of this substance to foods under all circumstances. It is possible that the majority of persons in sound health may suffer no evident injury from small amounts of salicylic acid, but its use by aged and infirm persons is attended with great danger. Many European countries prohibit the addition of salicylic acid to foods. At the present time it is chiefly used to preserve fruit and vegetable products.

Speaking of salicylic acid Dr. Wiley says (evidence before Committee of H. of R. in February, 1906): ‘There has been a general consensus of opinion throughout the world that salicylic acid is a very harmful substance, and this prejudice is perhaps greater than against any other material employed for preserving purposes. That salicylic acid should be singled out especially for condemnation among preservatives does not seem to be warranted by the data which have just been presented and discussed. That it is a harmful substance seems to be well established by the data taken as a whole. It is, however, a harmful substance of very minute virulence.’

SULPHURUS ACID AND SULPHITES.

A very compendious study of sulphurous acid and its salts as food preservatives has been published by Dr. C. E. Calm, of Chicago, in pamphlet form in 1904. It is made specially valuable by containing a good bibliography of the subject.

After citation of numerous authorities, Dr. Calm sums up the case for this preservative as follows:—

1. Sodium sulphite is prescribed by the United States Dispensatory and medical text books.

2. Sulphurous acid compounds exist naturally in foodstuffs, for example, in meats, &c.

3. Sulphurous acid or the sulphites are extensively employed in nearly all articles of food.

4. Sodium sulphite acts as a meat preservative (1) by inhibiting to a certain extent the growth of bacteria, and (2) by maintaining the natural colour of fresh meat.

5. Spectroscopic analysis proves that sodium sulphite causes the formation of oxyhæmoglobin, to which the red colour of sulphite treated meat is due.

6. Sodium sulphite acts as a preservative only when it is added to strictly fresh meat, and has no effect when the meat is even slightly tainted and the hæmoglobin begins to be broken down.

7. The sulphites by their nature prohibit an abuse, since an excessive amount produces an unnatural colour, and renders the meat unpalatable.

8. All experiments made thus far on animals to determine the toxic effects of the sulphites have failed to represent existing conditions, since excessive doses of the sulphites have been given over long periods of time.

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9. Seventy-six per cent to 96 per cent of the sulphite used on meat as a preservative becomes oxidized to sulphate before the meat is ready for consumption.

10. No case is on record in which it was proved that sodium sulphite as used in foods was injurious to health.

Without in the least impugning the good faith of Dr. Calm, we cannot shut our eyes to the fact that he holds a brief for the trade, being himself a manufacturer of these preservatives. In illustration of the natural bias involved in such connection, I may quote the deliverance of the English Parliamentary Committee on this subject, italicising the portion of this deliverance which Dr. Calm has quoted (page 30):—

‘Concerning the physiological effects of the sulphites, a preservation often used by butchers, poultry dealers and brewers, there has been no evidence laid before this committee. It appears, however, that when sulphurous acid or its salts are added to organic compounds such as beer or butchers’ meat, some is at once oxidized to sulphate, which may be regarded at any rate in the amount present as indifferent; some attaches itself chemically to certain constituents of the food in question and the compound formed is also innocuous; a third portion remains as sulphurous acid, and it is this portion alone which is of permanent efficacy as an antiseptic. Concerning the effect of this moiety upon the consumer pharmacologists do not seem agreed, and further investigation is required before the sulphites can be regarded as either harmful or harmless.’

It will be noted that Dr. Calm only quotes that part of the finding of the committee which seems to bear out his own contention, and omits the limiting clause, which, for the consumer, contains what is, by far, the most important feature of the committee’s declaration.

Another point—which I would fain ascribe to a printer’s error—must not be overlooked. Instead of writing, ‘some is at once oxidized to sulphate, which, &c.’ Dr. Calm writes, ‘same is at once oxidized to sulphates, which, &c.’ It is apparent that the very slight verbal change puts a quite different meaning on the phrase; a meaning which, however, any careful reader would see to be unwarranted by the context—since the word ‘some’ after the semi-colon demands its correlative.

I am not aware of any important research work on sulphites since 1901 (the date of the Parliamentary Report) which would warrant us in finding a positive safety in their use as preservatives; and I think that the question of the harmfulness or the harmlessness of their use must remain open for the present.

LEBBIN and KALLMAN (Zeits. offentl. Chem. 1901, 324)—From numerous experiments carried out on animals and on human beings, the authors have come to the conclusion that our present notions as to the toxicity of normal sulphites are wholly erroneous. With acid sulphites, however, the action is quite different, for most of them are as corrosive as free acids.

In Dr. Lebbin’s pamphlet, already quoted under Boron Compounds, he takes up the matter of sulphites, specially criticising the experimental work and conclusions of Pfeiffer; and he holds that the very experiments which led Pfeiffer to regard sulphites as dangerous to health, are capable of such interpretation as ‘settles the question in favour of the meat dealers.’ It is, however, abundantly evident that in this pamphlet Dr. Lebbin is a champion of the trade, and not an investigator.

II. SCHMIDT (Ch. Centralb., 1904, II, 59), asserts that sulphurous acid in dried fruits exists in combination with aldehyde and ketone bodies, and with glucose. The sulphurous acid disappears gradually on long storage of the fruits, with access of air. On cooking the fruit, the sulphurous acid rapidly disappears and the more completely in proportion to the quantity of water used.

A. BEYTHIEN (Zeits. für Untersuch., Nahr und Genussm., 8-36) considers the question of use of sulphurous acid as a preservative in wine, hops, beer, flesh, fruit and vegetables. He criticises an opinion of Hofman, and thinks that the use of the acid in dessicated fruits should be challenged.

Sulphurous acid has been reported in dried fruits, chiefly American, by Beythien and Bohrisch (Zeit für Untersuch., der Nah, und Genussmittel, 1902, 401)—Californian apricots contained from 0·216 to 1·158 per cent, (calculated as crystallized sodium sulphite) peaches, 0·992 per cent, pears, 0·2399 per cent—Italian prunes contained 0·264 per cent.

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W. KERP (Ch. Centralb, 1904, II, 56) as the result of a critical study of the analyses of 1,071 wines from different countries, reports as follows:—

42.95	per cent	contained	SO ₂	per litre	up to 50 mgr.
34.18	“	“	“	51 to 100	“
14.00	“	“	“	101 to 150	“
5.88	“	“	“	151 to 200	“
2.99	“	“	“	over 200	“

The highest quantity found was 466 milligrammes, SO₂ per litre.

CH. HARRINGTON (Boston Med. and Surg. Journal, 1904, 21, 555, through Zeits. f. Untersuch, d. Nahr und Gunnssm, 1905, 300).—Fed five cats for 20 weeks with meat preserved with .2 per cent of sodium sulphite. All organs were found normal at the end of the period, except the kidneys, which showed very decided deterioration in every case.

W. D. BIGELOW (Year Book, Department of Agriculture, Washington, 1900, p. 556).—‘In all wine producing countries, except America, the amount of sulphurous acid employed in treatment of wine is limited by law to one or two parts in 10,000 parts of wine (from 1.5 to 3 grains per quart). In this connection it must be remembered that the sulphurous acid content of the wine is largely combined as aldehyde sulphurous acid. Free and sulphite sulphurous acid are only permitted in European wines, in one-tenth the amount given above. The compound is recognized as directly toxic, and a larger proportion than that mentioned is universally recognized as injurious. The sale of beer containing sulphurous acid or sulphide is specially prohibited in almost all civilized countries.

HOLLEY (Journ. Am. Chem. Soc., 1906, 994) finds, as the results of work upon a large number of samples of sausage meats and dried fruits, the following:—

1. The amount of sulphites mixed with meats to preserve them is much larger than is generally supposed.
2. The amount of sulphites recovered in analysis is about one-fourth of that originally present.
3. Cooking sausage meat does not convert the sulphites into sulphates, as claimed.
4. With dried fruits, which have been bleached with sulphurous acid, the amount remaining unoxidized in the fruit is large.

BENZOIC ACID AND BENZOATES.

A. WEITZEL (Analyst, 1902, 271) shows that benzoate of soda, along with other alkaline salts, retards the coagulation of milk by rennet.

H. LEFFMAN (Analyst, 1899, 102) finds that sodium benzoate has no appreciable injurious influence on any of the enzymes.

There appears to have been very little research work done, touching the nature of physiological effects of benzoic acid and its salts in food. These substances are, at the present day, very extensively in use; and that this should be the case, without first establishing their harmlessness to health, is a violation of what should be a fundamental principle.

In his evidence given before a committee of the House of Representatives, in February of this year, Dr. Wiley refers to conclusions reached as the result of a practical feeding test, extending over three or four months, with twelve young men, whose food was treated with benzoic acid. ‘The most pronounced symptoms during the preservative period were burning sensations in throat and esophagus, pains in stomach, some dizziness, bad taste, and when the limit of endurance was reached the subject suddenly became nauseated and ill. In all cases but one there was a material loss of weight. And that this bad effect was continued during the after period shows the persistence of the after effect. Only two of the members of the class immediately showed an increase in health after the suspension of the preservative.’

HYDROGEN PEROXIDE.

Probably the newest suggestion for a preservative for milk is that of Jablin Gonet—(Ann. Chim. Analyt., 1901, 129—through the Journ. Soc. Chem. Indust., 1902,

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420) who states that '1 c.c. of a 12 per cent solution of hydrogen peroxide added to one litre of milk, prevented spoiling for two days; 2 c.c. for four days and 6 c.c. for six days, at a temperature of 20° C.= 68° F. The hydrogen peroxide cannot be tasted in the milk, and according to a series of physiological experiments, is harmless to the human system.'

A. RENAUD (Moniteur Scientifique, 1904, 39—Abstract Jour. Soc. Chem. Indust., 1904, 74), recommends this substance as a preservative for milk.

H. FRINGS, JR.—(French Pat. 338,333, 1903), obtained a patent for the use of hydrogen peroxide as hindering the development of mycelium and schizomycetes, while not prohibiting the development of saccharomycetes. He also suggests the addition of substances, like peroxides, which are capable of producing hydrogen peroxide when acted on by acids.

A. SCHRÖDER, Berlin (Jour. Soc. Chem. Indust., 1904, 1108) obtained a patent in England in 1904, for the addition of peroxides to foods, and subsequent decomposition of the peroxides (of Ca, Mg or Na.) by carbonic acid, under pressure, or by acid phosphates.

AMBERG (Jour. Biol. Chem. I, 219) says: 'While there is some doubt as to whether hydrogen peroxide can bring about a complete sterilization of raw milk in every case, and while the amount of this substance needed for the preservation of milk during a given period of time is uncertain, its harmlessness seems to justify its trial as a milk preservative.'

BUDDE (Milch—Ztg. 32—No. 44) has asserted that the treatment of milk by 35-100,000 ths. of hydrogen peroxide at a temperature not lower than 40° C. destroys bacterial growth.

P. GORDAN (Centralb. fr. Bakter u. Parasitenk II, 13—716 through Chem. Centralb. 1905—551) has examined Budde's work, and finds the development of bacteria very little affected by the treatment recommended. Somewhat larger quantities restrained the development of acidifying bacteria, and three times the quantity stated by Budde destroyed them altogether. 7-10,000 ths. of hydrogen peroxide gave decided taste to the milk, and larger additions gave an itching sensation in the throat. 7-10,000 ths. caused but little reduction of the resting spores, or streptococci; 6 hours at 50° C. with above amount destroys the typhus bacillus, but this temperature will destroy it without peroxide. Budde's experiments are shown to be untrustworthy in other respects.

Among the less known preservatives may be mentioned:—

Saccharin: in regard to which the only work that I have seen is that of—

F. BERLIOZ (Chem. Zeit. 1900, 416)—The author's experiments confirm the statement of Nencki, that saccharin, at least in small amounts, does not interfere with gastric or pancreatic digestion.

Fluorides:

OTTO and CHARLES W. HEHNER (Analyst, 1902, 173) give the results of experiments which show that 'salivary action is prevented by a solution containing 0.04 per cent of sodium fluoride, or its equivalent in ammonium fluoride, and that as little as 0.02 per cent solutions of fluoride greatly interfere with peptic digestion.'

Hydrofluoric Acid: which was patented in France in 1903 (Jour. Soc. Chem. Indust., 1903—756) by Sanlmann and Eichelbaum, for preserving fruit juices. 'To 100 litres of the juice add 50 c.c. of a 40 per cent solution of hydrofluoric acid. Before putting the juice on the market the acid may be precipitated by chalk, or neutralized by addition of an alkaline carbonate.'

CHEVY (Bull. de Therap. C. IX., 108) finds that hydrofluoric acid in the ratio 1:3000 prevents fermentation in milk, soup and wine.

It may be mentioned that Neuder (Chem. Zeit., 1904, 857) claims priority in the discovery of this substance as a food preservative, and also for the mode of using it, which involves its separation from fluids containing it by precipitation with lime.

G. HEINZELMANN (Jour. Soc. Chem. Indust., 1904, 797) calls attention to the fact that since the disallowance of salicylic acid as a preservative for fruit juice in Germany, a solution of hydrofluoric acid has come on the market under the name 'Fruit,'

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accompanied by a white powder (chalk) to be added before offering the fruit juice for sale.

The danger, in this case, is quite evident, and the placing of such irritant poison on the market illustrates the recklessness which characterizes the effects of manufacturer under stress of competition.

Carbonic Acid: J. HERZFELD (German Pat. 147,653) obtained a patent in 1902 for the preserving of solid foods by the use of carbonic acid under pressure. The pores of the material are opened by application of suitable temperature, and the gas is then applied under high or lower pressure, as may be necessary. (Chem. Centralb, 1904, L., 334.)

Formic Acid: OTTO and TOLMACZ (Zeit. für Nahr. and Gennssm, 7-78) described new preservative, 'Werderol,' for fruit juice. This is essentially a 10 per cent solution of formic acid.

Beta-Naphthol: is a compound of marked toxic properties. Dose for an adult is 3 to 8 grains. As a food preservative it should not be tolerated.

Zirconium Salts.—Quite the newest and entirely up-to-date preservative, has been patented by A. Müller Jacobs in the United States (pat. 775066, 1904). This is the immersion of decomposable foodstuffs in a solution of zirconium salts—'these salts possessing radio-active functions.'

U.S. Patents have been granted (April, 1905), to H. Lieber for the impregnation of foods with radio-active emanations from thorium—(J. Soc. Ch. Indust., 1905, 557.)

ED. MACRAY CHASE (Jour. Am. Chem. Soc. XXVI, 662) has recently examined some samples of canned sausage of German origin, to which aluminium acetate had been added as a preservative. Two brands were found to contain 60 to 70 and 175 to 200 milligrammes of aluminium respectively per 1 pound tin, the greater part being present in the sausages themselves.

It is claimed that the alumina exists in a condition in which it is insoluble, and hence harmless to the system. Chace carried out experiments to determine the truth of these claims. He found that from 70 to 80 per cent of the alumina was dissolved from these sausages, by action of pepsin, and he holds that this is sufficient to fully condemn the use of the article named as a food preservative.

JEAN FERDINAND (Rev. intern. fabricat., 1903, 159) is of opinion that the study of *Fluoride of sodium* as a butter preservative, is deserving of attention. From 10 to 15 grammes per 100 kilog. of butter suffices, and this small quantity would be certainly made insoluble by reaction of lime salts naturally present in drinking water and other foods.

GENERAL.

The subjoined notes, having a general bearing on the subject of food-preservation, may find a place here.

E. LABORIDE (Jour. Pharm. Chim., 1899, 484. Through the Analyst, 1900, 154).

Small quantities of isobutyl alcohol, glycerol and malic acid favoured peptic digestion; also methyl alcohol in very slight degree; ethyl and propyl alcohols, lactic and tartaric acids and mannitol and glucose on the other hand retarded peptic digestion.

With trypsin (pancreatic digestion) methyl and isobutyl alcohols, glycerol and glucose accelerated, while ethyl and propyl alcohols, lactic, malic and tartaric acids and mannitol, retarded the process.

A. WEITZEL, the Analyst, 1902, 271.—Experiments on the coagulation of milk by rennet, in presence of various substances, as follows:—Group (1) Alkaline: Borax, sodium hydroxide, sodium carbonate and sodium bi-carbonate. (2) Salts capable of precipitating lime: Sodium oxadate, sodium fluoride and sodium oleate. (3) Other salts having an alkaline reaction: Sodium sulphite, salicylate, benzoate, propionate, acetate and formate. (4) Neutral salts: Sodium chloride, lithium chloride, sodium nitrate, perchlorate, tartrate, sulphate, ammonium sulphate and magnesium sulphate. (5) Acid salts: Sodium hydrogen tartrate, sodium hydrogen sulphate and sodium per-

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sulphate. (6) Acids: Boric, carbon dioxide, oxalic, benzoic, salicylic, protocatechuic and gallic. (7) Formaldehyde, saccharin and cane sugar.

The following results were obtained:—

(1) Borax retarded the coagulation when present in only small quantities (0·01 to 0·04 per cent), and the amounts usually employed (1 gramme per litre of milk) stopped the action of the rennet altogether. All other alkaline salts acted similarly.

(2) Coagulation was checked by those salts which precipitated the lime compounds. When the reaction became alkaline, the influence of alkalinity also showed itself.

(3) The neutral salts generally had a retarding action. Some (sodium and lithium chloride), principally in concentrated solution, more feebly when present in small quantities. Magnesium sulphate, in both concentrated and dilute solution, had considerable influence.

(4) Small quantities of the acids aided the coagulation. After carbon dioxide, boric acid had the most feeble action. The acid salts acted in the same manner as the acids.

(5) The action of formaldehyde was so powerful that it must be considered as a direct poison to the rennet enzyme. Saccharin in small quantity had little influence, but stronger solutions greatly hindered the coagulation. Sugar, up to 20 per cent of the weight of the milk, had no action.

PRICE, T. M. (Centralb. Bakteriöl, 1905, 65). Calves of two weeks old were fed for two nine-day periods with preserved milk, parallel experiments with normal milk being carried out.

DIGESTIVE OF PROTEIN AND FAT AS COMPARED WITH NORMAL MILK.

Treatment of Milk.	Protein.	Fat.	Remarks
Normal milk	Normal.	Normal.	
Formaldehyde, 1 : 10000.....	0·76	0·96	Per cent excess.
Salicylic acid, 1 : 1000.....	5·07	3·71	" defect.
Boric acid, 1 : 1000.....	1·73	0·08	" "
Borax, 1 : 675.....	1·30	0·02	" "

It will be seen that the formaldehyde treatment did not injuriously affect the digestibility of the milk, while the other treatments did so in marked degree ; the salicylic acid being specially harmful. Two calves fed for two months on formaldehyde and boric acid treated milks, continued to increase in weight.

The influence of formaldehyde upon the digestive ferments was studied with the following results :—

Milk was treated with formaldehyde in the proportions given:—

DIGESTIVE ACTION.

Enzymes.	Not Affected.	Disturbed.	Stopped.
Rennet.....	1 : 2500	1 : 1875	1 : 500
Pepsin.....	1 : 125	1 : 50	1 : 25
Pancreatin.....	1 : 2000	.....	1 : 1500
Steapsin (fat digesting ferments).....	.....	1 : 50	1 : 35
Ptyalin.....	1 : 1500	.....	1 : 1250
Amylopsin.....	.....	1 : 1000	1 : 500

Bouillon cultures of bacillus acidi lactici, B. Subtilis, B. Coli were killed by formaldehyde in six hours by a ratio of 1 : 1560, and in 72 hours by a ratio 1 : 1870.

The smallest amounts of the following preservatives found effective in preserving milk for 48 hours, were :—

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Borax..	1 to 675
Boracic acid..	1 to 1,000
Salicylic acid..	1 to 1,000
Formaldehyde..	1 to 20,000

A. CHARRIN (Comptes Rendus d' l'Académie des Sci., 139-160) shows that sterilized food is less digestible than natural food, and may give rise to irritation of the intestinal mucous membrane, with all its consequences.

It will, I think, be conceded by any one who reads the subject carefully, that the balance of evidence is decidedly against the use of any preservative in food. At the same time it must be granted that there are degrees of danger to health among the chemical substances which find favour as preservatives among manufacturers, and it may be that, in certain cases, less harm may result from the preservative than would result from deterioration of the foodstuffs, were this kept for a length of time without an antiseptic. In order to decide the question as to whether, in certain cases, such as long voyages, travelling in out-of-the-way regions, supplying stores to soldiers on the march, mining camps, &c., as well as in the distribution of foodstuffs, to the great centres of population, far removed from the places where such foods are produced, it might not be preferable to employ chemical preservatives rather than consume food which had suffered natural decomposition, or pay the high prices necessitated by quick transit, or such costly methods as cold storage, hermetical sealing, &c., it is evident that experiment must determine the extent of the injury to health which results from the use of food preserved from decomposition by antiseptic chemicals.

The most complete investigations of the kind named, which are so far on record, are those conducted by the Imperial Health Office at Berlin, and those conducted by the Bureau of Chemistry at Washington. The general conclusions reached in both cases go to show that danger attends the use of all preservatives, and that unless great care is employed in regulating the quantity, very serious harm must result. Most countries have enacted stringent laws regarding the matter.

The following concise summary of Food Laws, as regards preservatives, is taken from a bulletin issued by the United States Department of Agriculture, through the *Jour. Soc. Chem. Industry*, 1901, p. 774 :—

‘Prohibition of the use of chemical preservatives and aniline dye stuffs as colouring agents for liquors is almost universal, while the employment of all foreign colouring matter is often prohibited. The use of chemical preservatives and foreign colouring matter with beer is usually prohibited. The sale of foods containing saccharin, sucrol, and similar preparations is prohibited in Belgium, France, Germany, Italy and Roumania. The importation of saccharin, except for medicinal use and under prescribed conditions, is prohibited by Belgium and Greece. All countries permit the dyeing of confections and similar articles which are themselves colourless, but are customarily coloured artificially. Belgium permits mustard to be coloured artificially when properly labelled. Salicylic acid and boric acid have been used so much more commonly than other preservatives, that legislation is usually directed against them, whilst local bodies often extend the prohibition to benzoic acid and other substances as they come into use.

‘The sale of foods containing preservatives is prohibited in Austria, France, Hungary and Roumania, and that of beverages containing preservatives in Belgium, Germany and Switzerland. The addition of salicylic acid to food is prohibited in France. Holland does not permit the sale of beer containing salicylic acid, and Spain forbids its addition to wine. Italy permits the addition of 0.2 per cent of boric acid to butter, but forbids the use of other preservatives.’

Canada is behind other countries in this regard, and with the single exception of salicylic acid in potable liquors, which is specifically forbidden, leaves the onus of proving the harmfulness of any preservatives used in food upon the complainant. There can be little doubt, however, that our courts would find a verdict in accordance with the recommendations of the English Parliamentary Committee of 1901. It is desirable that action should be taken to give these very conservative recommendations a legal status.

It has been suggested that the scheduling of certain preservatives as alone permissible would put a stop to the investigatory and experimental work now carried on by the manufacturers who, it is asserted, are continuously seeking for new substances suitable to their needs. There does not seem to me to be much force in this contention. If we assume that no manufacturer would wish to employ a new preservative until he had made sure of its harmless character; then the evidence which serves to satisfy himself of this fact could easily be adduced before a government committee; and if it proved to be convincing, such new preservative could easily be added to the list. The literature of formaldehyde is in evidence to show that, in this particular case, certain manufacturers were satisfied with data which entirely failed to satisfy disinterested experts.

Finally, I have several times been asked, (Is it possible for an honest and conscientious manufacturer to use a preservative, in view of the conflicting evidence which investigators have put on record?) In reply I would say, that I can easily conceive the natural bias of a manufacturer in favour of preservatives to lead him to accept the conclusions of men like Dr. Liebreich and Dr. Lebbin and others, as sufficient justification for the careful and judicious employment of boron compounds, sulphites and benzoates; while the concessions of the English Parliamentary Committee in regard to the first two named may seem to give him full warranty for their use. The attitude of the consumer towards the matter is quite different, as I have already pointed out. His preference should undoubtedly be for fresh food, or for food preserved by methods which have stood the test of time, and have proved their harmlessness.

Important opinions upon the subject of legislation regarding preservatives, are as follows:—

M. FAYOLLE (*Bull. Scien. Pharmacolog*, 1904, 172; *abst. Zeit. für Nahr. and Genussm.*, 1905, 374).

After referring to the demonstrations of the consulting committee of hygiene, as proving interference with assimilation and reduction of activity of the digestive ferments, due to preservatives in foods, says: 'A partial prohibition is insufficient. Only a general law which shall make the addition of such preservatives a punishable offence can be effective.'

ECCLES, R. G. (*Amer. Jour. Pharm.*, 1904, 506) contends that the opposition to the use of preservatives is based on theoretical considerations. He asserts that statistics prove that countries in which the use of preservatives is forbidden, show a higher percentage of deaths due to diseases of the digestive tract than those in which no laws against preservatives exist.

In his recently issued work on *Food Preservatives* (New York: Van Nostrand & Co.), a very lucidly written book of 202 pages; Dr. Eccles shows an extensive acquaintance with the literature of his subject.

Chapters III, IV. and V. contain many references of value. Dr. Eccles is, however, a special pleader; and the judicial attitude towards his subject is conspicuously lacking. Such sentences as the following bear out this contention.

'Food commissioners and food chemists, for some reason, do not interfere with sugar manufacturers and candy men as they do with catsup bottlers and fruit juice bottlers.'—(p. 37.) 'Surely no one can seriously contend that the almost weekly recurrence of cases of severe ptomaine poisoning is at all comparable with the imaginary ills that preservatives are supposed, by some people, to produce.'—(p. 23.) It is regrettable that Dr. Eccles should have allowed himself to depart from clear and plain statement, because he has much of real value to say; and an unbiassed narrative of experience and fact is always valuable and welcome.

Many of his statements clearly indicate his standing as a special pleader. Such are the following: 'There is absolutely nothing inherently injurious in substances the dose of which is kept below the limit of minimum medicinal effect.'—(p. 197.) 'By permitting free competition in the use of preservatives, newer and better ones are sure to be sought for and discovered.'—(p. 34.) Apart from the fact that it is out of the question that a long-suffering public should permit 'free competition in the use of pre-

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servatives. It is open to question whether a ready acceptance of preservatives by the public would not tend to make further research unnecessary. By prohibiting the use of any preservative not proved to be physiologically harmless, will not the search for such a preservative be stimulated?

H. LEFFMANN (Amer. Jour. Pharm., 1904, 503) acknowledges that a certain degree of injury to health results from the use of most modern preservatives. But he contends that this is not the proper way to look at the question. No preserved food is as good as a fresh food; and even boiling renders albumen less digestible. Dessication, smoking, pickling, have still more marked effect in hindering the digestibility of food. It is therefore an arbitrary and unreasonable conclusion to condemn the newer preservatives while allowing the old. What evidence shows that common salt is harmless in food? What proof have we that benzoate of soda is more objectionable than the residues from wood smoke?

Dr. Wiley stands out clearly for the prohibition of all chemical preservatives in food; he makes a distinction between condimental preservatives and chemical preservatives; but I fear that it may sometimes be difficult to mark the dividing line. He recognizes that exceptional cases may occur, when the employment of a preservative may be the lesser of the evils, *e.g.*, prolonged voyages, or exploration, sieges, &c. Dr. Wiley's attitude is altogether admirable, as the expression of a high principle of ethics; but it may be questioned whether we may absolutely ignore the economics of a matter of this kind. The cost of a foodstuff to the consumer is often a reason for his choice of the second best, and there is no doubt that the cost of placing many kinds of food on the market is greatly lowered by the use of preservatives. The wealthy will always be able to commend fresh foodstuffs; or to pay the higher prices required to meet the cost of packing in the best methods known to art. But the poorer classes of the community may be compelled to do altogether without certain desirable foods or use these as preserved by one or other of the so-called chemical preservatives. At the same time when we consider that the excretion of most of these substances falls chiefly upon the kidneys, and recognize the fact that kidney disease of one kind or another is a main cause of the loss of vitality in middle life, and indeed figures very largely in mortality records, we cannot but feel that the legislation of potent germicides in food products is a matter of the most serious kind.

It may be well to notice the fact that traces of chemical substances, identical with some of the preservatives above named, occur naturally in certain fruits. Thus, benzoic acid is a constituent of several kinds of fruits, and in particular of the cranberry.

L. PORTES AND A. DESNOULIÈRES (Ann. Chim. Anal. Appl. 401) have found out by the examination of fresh strawberries, that salicylic acid, probably as the methyl ester, is a normal constituent of this fruit. The amount in the fresh berries is about 1 mgr. per kilog. (*i.e.*, about 1 part per million or 0.0001 per cent.)'

E. O. V. LIPPMAN (Chem. Zeit. 1902—465) found a deposit in a vacuum pan, which had been used for concentrating lemon juice. On analysis this gave about 0.5 per cent of boric acid. Various commercial samples of lemon juice were then examined, as well as lemons and oranges, and in nearly every instance strong boric acid reactions were obtained. In the lemons, boric acid was detected both in the juice and in the rind.

Advocates of preservatives have sought to make an argument in their favour of the above mentioned fact. But aside from the extreme minuteness of the quantity naturally occurring in these fruits, the fact that it occurs naturally, and has hence always been a part of the foodstuff in question, puts it out of the category of ordinary commercial preservatives.

Some samples of common salt are found to contain traces of borax, and the following note is interesting:—

FARNSTEINER and others (Bericht über die Nahrungsmittel Kontrolle in Hamburg, 1903-4, 36) find that common salt is free from any such amounts of borates as would interfere with the detection of these when used as food preservatives. But certain Italian samples of salt contain notable amounts of borax.

A. MCGILL.

APPENDIX C.**BULLETIN No. 127—ROLLED OATS AND OATMEAL.**

OTTAWA, October 6, 1906.

W. J. GERALD, Esq.,

Deputy Minister of Inland Revenue.

SIR,—In the month of April last representations were made to this branch to the effect that flaked and rolled oats were being manufactured and sold in Ontario of very inferior quality. The samples submitted contained an excessive proportion of the exterior tissues of the grain besides foreign substances. I then recommended that an inspection be made of oatmeal and similar products as soon as the work of the Laboratory would permit. Subsequently, and as authorized by you, a collection was made of such samples, the origin of which and the results of their examination are given in the table which accompanies this report. In this table the microscopical examination and percentage of crude fibre are stated, these determinations being all that were necessary for the purpose in view. Only in one case, No. 27655, was any foreign starch detected, and as regards crude fibre the percentage varied from 0·80 to 3·35 per cent. The latter amount must be pronounced as excessive, if reference is made to the analyses of both European and American oatmeals which are on record. It is exceedingly seldom that these show higher than 2 per cent crude fibre, and in my opinion, that amount might fairly be assumed as the highest allowable limit. Among the 155 samples examined, 64 show higher amounts of crude fibre than 2 per cent, and this would seem to indicate that with regard to 41·3 per cent of the oatmeal samples now offered for sale in the Dominion the quality might be improved. At the same time none of the samples were found to contain the large amount of oat hulls originally complained of, and in the absence of any standard, it is impossible to characterize any of the samples as adulterated.

Besides making the determinations of the table some of the samples were analysed in order to obtain a general idea of their composition. The results are given in the following statement and include the alcohol and water extractives which were determined in order to an approximative estimation of the starch by difference. In obtaining the results of both tables the following assistant analysts were more or less engaged :—Misses S. E. Wright and E. Davidson, Messrs. A. Lemoine and A. Valin.

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ANALYSES OF SOME OF THE SAMPLES MENTIONED IN THE TABLE ACCOMPANYING THIS REPORT.

No. of Sample.	Name.	Total Proteids N. 6·25.	Moisture.	Fat or Petroleum Ether Extract.	92 p. c. Alcohol Extract.	Water Extract.	Crude Fibre.	Total Ash.	Starch by Difference
27137	Rolled Oats.....	11·56	8·68	3·76	3·80	2·20	1·60	1·70	66·70
27159	".....	12·06	9·40	4·20	3·76	1·68	1·80	1·98	65·12
27162	".....	11·87	8·72	5·40	3·64	1·44	2·10	1·56	65·27
27164	".....	11·56	9·65	5·07	3·16	2·72	2·20	1·58	64·06
27176	".....	11·37	8·36	4·76	4·28	1·52	1·65	1·60	66·46
28305	Oatmeal.....	11·18	9·03	3·89	4·28	2·32	3·35	0·96	63·85
28307	".....	10·93	9·08	3·76	4·44	2·28	2·20	1·74	65·57
28317	".....	12·87	9·20	3·40	4·60	1·52	2·00	1·74	64·67
24221	Quaker Oats.....	11·87	9·56	5·72	3·36	2·68	2·30	1·74	62·77
24224	Rob Roy Scotch Oat- meal.....	12·00	9·00	3·00	4·84	1·88	1·70	1·08	66·50
24242	Flaked Oatmeal.....	11·87	9·76	5·16	3·28	2·00	2·00	1·54	64·39
24245	".....	12·00	10·08	5·32	2·32	2·20	3·15	1·64	63·29
24254	Rolled Oats.....	12·62	9·12	4·60	3·60	2·48	1·55	1·84	64·79
24259	".....	12·59	7·28	5·48	2·92	3·04	1·75	1·20	65·83
24260	Flaked Oats.....	12·00	8·68	4·52	3·28	2·44	2·15	1·46	65·47
24263	".....	12·81	8·80	5·64	2·29	2·28	1·80	0·92	65·46
24264	Rolled Oats.....	13·93	8·20	5·44	3·56	2·92	2·40	0·35	63·20
706	Oatmeal.....	12·69	7·68	5·28	4·28	3·88	0·80	1·10	64·29
707	".....	13·37	8·12	5·56	3·64	3·44	0·80	0·70	64·37
27657	Rolled Oats.....	13·94	9·88	3·72	3·48	1·08	2·10	1·64	64·16
29317	Oatmeal.....	11·82	7·60	5·08	4·48	2·76	2·35	1·15	64·76
29322	Rolled Oats.....	12·63	8·24	5·32	4·12	3·00	1·00	1·55	64·14
29457	".....	13·75	9·48	4·00	4·84	0·52	1·35	1·52	64·54
27637	Oatmeal.....	12·94	8·28	2·52	5·04	1·60	1·60	1·84	66·18
30125	Jersey Oats.....	11·02	8·80	4·72	2·56	2·24	1·50	1·86	67·30
28678	Quaker Oats.....	11·94	7·56	5·64	3·76	3·00	0·25	0·45	67·40
28679	Rolled Oats.....	12·93	7·56	5·80	4·04	2·92	0·20	0·90	65·65

These analyses give the following averages as regards the most valuable nutrients in oatmeal :—

Proteids.....12·30 p.c.
Fat.....4·67 "

The averages given in König's large work (*Chemische Zusammensetzung der Menschlichen Nahrungs—und Genussmittel*, 1903 ; I, 632) for the same constituents in oatmeal are as follows :—

Proteids.....13·87 p.c.
Fat.....6·18 "

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE,

Chief Analyst.

DISTRICT OF NOVA SCOTIA R. J. WAUGH, INSPECTOR.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.	Name and Address of Manufacturer or Furnisher.	Inspector's Report.	Microscopical Examination.	Grade of Flour.
1906.								
June 19	Roller Oats	27137	J. F. Crowe & Co., Halifax, fax.	1 lb. 4c.	P. McIntosh & Co., Toronto, sold as Crown brand.		Out starch and fines.	1-60
" 20	"	27148	W. E. Crowe & Co., Halifax, fax.	1 " 3c.	J. Valon, Fergus, Ont. Sold as Monkland brand.		" "	2-25
" 20	"	27153	A. L. Doyle & Co., Halifax, fax.	1 " 4c.	Unknown		" "	2-00
" 25	"	27159	Ryan Bros., Truro, N.S.	1 " 5c.	Tillson Co., Tillsonburg, Ont. Taken from bulk.		" "	1-80
" 25	"	27161	Angus & Pollock, Truro.	1 " 3c.	" " " " " " " "		" "	1-55
" 25	"	27162	A. F. Ross & Co., Truro.	1 " 3c.	" " " " " " " "		" "	2-10
" 25	"	27164	W. P. Carter, Truro	1 " 3c.	American Cereal Co., Pe- terboro', Ont. Sold as Victor brand; taken from bulk.		" "	2-20
" 25	"	27166	E. E. O'Brien, Truro.	1 " 3c.	Tillson Co., Tillsonburg, Ont. Sold as Aberdeen brand; taken from bulk.		" "	2-15
" 25	"	27169	H. W. Ryan, Truro.	1 " 3c.	American Cereal Co., Pe- terboro', Ont. Sold as Victor brand; taken from bulk.		" "	2-55
" 26	"	27170	J. E. Walker, Dartmouth	1 " 5c.	Unknown Vendor purchased from J. F. Crowe, Halifax.		" "	2-00
" 26	"	27171	B. O. Bishop, Dartmouth	1 pkg. 10c.	American Cereal Co., Pe- terboro', Ont. Sold as pure Quaker rolled white oats.		" "	2-10
" 26	"	27172	C. McNab, Dartmouth.	1 " 25c.	P. McIntosh, Toronto. Beaver brand Canadian rolled oats.		" "	1-90
" 26	"	27173	G. A. Orman, Dartmouth.	1 " 5c.	American Cereal Co., Pe- terboro', Ont. Sold as Saxon rolled oats		" "	2-60
" 26	"	27174	E. M. Walker, Dartmouth	1 " 3c.	American Cereal Co., Pe- terboro', Ont. Victor brand.		" "	1-45
" 26	"	27175	S. Mott, Dartmouth.	1 " 3c.	Unknown Purchased from J. F. Crowe, Halifax.		" "	1-65
" 26	"	27176	Moseley & Co., Dartmouth.	1 " 4c.	Ogilvie Milling Co., Mont- real. Put up in sacks		" "	1-65

DISTRICT OF PRINCE EDWARD ISLAND T. MOORE, INSPECTOR.

June 18 Rolled Oats.	28302	Jenkins & Son, Charlotte 1 1/2 lb.	6c.	Tillson & Co., Tillsonburg, Ont.	Oat starch and fis- sues.	2 60
" 18 "	28304	Geo. Rackham, Charlotte 1 1/2 "	6c	Woodstock Cereal Co., Woodstock, Ont.	" "	1 75
" 18 Oatmeal.	28305	Geo. Rackham, Charlotte 1 1/2 "	6c.	John Andrews, Charlotte town, Royalty.	" "	3 35
" 19 "	28307	Brace & McKay, Sum 1 1/2 "	5c.	Charles Ives, Bedouque, P. E.I.	" "	2 20
" 19 Rolled Oats.	28312	Sinclair & Stewart, Sum 1 1/2 "	5.	Archibald XXXX Rolled Oats, Beachville, Ont.	" "	1 40
" 19 Oatmeal.	28313	Sinclair & Stewart, Sum- 1 1/2 "	5.	H. Mallett, North Granville, P. E.I.	" "	2 40
" 20 Rolled Oats	28316	T. White, Charlottetown 1 1/2 "	6.	Carvell Bros, Charlottetown	" "	2 90
" 20 Oatmeal.	28317	" " 1 1/2 "	6	Warren's Mills, North River, P. E.I.	" "	2 00

DISTRICT OF NEW BRUNSWICK J. C. FERGUSON, INSPECTOR.

June 19 Rolled Oats	24215	Bowman & Cole, 28 30 3 pkgs., 75c. Water St., St. John.	The Tillson Co. Ltd., Tillsonburg, Ont.	Labelled 'Tillson's Premium Rolled Oats.'	Oat starch and fis- sues.	1 25
" 21 "	24218	Hall & Fairweather, 79 3 " Ward St., St. John.	The American Cereal Co., Peterboro', Ont.	On label: 'Saxon Rolled Oats.'	" "	3 00
" 25 Quaker Oats.	24221	A. E. Trentowsky, 51-53 3 " Coburg St., St. John.	" "	Labelled on back two pounds 'Pure Quaker Oats.'	" "	2 30
" 27 Oatmeal, Rob Roy, Scotch.	24224	The Two Barkers, Ltd., 3 " 100 Princess St., St. John, N.B.	David Grierson & Co., Glasgow, Scotland, and Toronto, Ont.	Labelled 'Old fashioned stone ground, Rob Roy, the Chief O Scotias food; guaranteed. Registered Scotch Oatmeal. Brand, 'Blue Bell.' From bulk; quality guaranteed.	" "	1 70
" 28 Flaked Oatmeal	24227	McPherson Bros., 181 3 lbs, 12c. Union St., St. John.	G. Bent & Son, whole- sale, South Wharf, St. John, N.B.	Brand, 'Blue Bell.' From bulk; quality guaranteed.	" "	1 75
July 9 Rolled Oats.	24233	M. & H. Gallagher & Co., 34 Charlotte St., St. John, N.B.	P. McIntosh & Son, Toronto.	Labelled 'Beaver Canadian rolled oats; oven baked.	" "	1 25
" 12 Oatmeal.	24241	Steves & Allan a ch, 5 lbs., Main St., Moncton.	The American Cereal Co., Peterboro', Ont.	On head of barrel, 'Victor rolled oats; Staghead; oatmeal. Made in Canada.	" "	2 50
" 13 Flaked Oatmeal.	24242	George Stables, Public 3 " Square, Newcastle.	The Tillson Co., Ltd., Tillsonburg, Ont.	Labelled 'Aberdeen brand.'	" "	2 00
" 14 "	24245	E. A. Strang, Cunard St., 3 " Chatham, N.B.	Archibald, Beachville, Ont.	On package: 'Sampled Archi- bald's Peerless.'	" "	3 15
" 16 "	24248	S. Williamson, St. George 3 " St., Bathurst.	Walter Thompson & Son, London, Ont.	On package: Maple leaf trade mark.	" "	1 70

RESULTS OF EXAMINING 155 SAMPLES ROLLED OATS AND OATMEAL—Continued.

DISTRICT OF NEW BRUNSWICK—Concluded.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.	Name and Address of Manufacturer or Furnisher.	Inspector's Report.	Microscopical Examination.	Crude Fibre.
1906.								p.c.
July 23	Rolled Oats.....	24254	Estate of G. T. Whelpley, 580 Queen St. Fredericton.	3 lbs., 10c....	The Flavelle Milling Co., Ltd., Lindsay, Ont.	On package: 'Choice rolled oats; Thistle brand.'	Oat starch and tissues.	1.55
" 23	Oatmeal	24256	C. H. Burt, 332 Queen St., Fredericton.	3 " 15c....	Woodstock Cereal Co., Ltd., Woodstock, Ont....	On barrel: 'Coronet, 180 lbs., choice rolled oats,	" "	1.40
" 24	Rolled Oats	24259	J. W. Dalling, 15 17 King St., Woodstock.	3 " 15c....	Ogilvie, Montreal, Que....	Ogilvie's royal oats	" "	1.75
" 24	Flaked Oats.	24260	C. B. Snow, 4 Main St., Woodstock.	3 " 15c....	Flavelle Milling Co., Lindsay, Ont.	'Choice flaked oats; 'Diadem.'	" "	2.15
" 25	"	24263	James E. Porter & Son, Main St., Andover.	3 " 15c....	Geo. E. Barbour & Co. Ltd., St. John, N.B.	Labelled finest quality, G.E. B., 'Chinax.'	" "	1.80
" 25	Rolled Oats.....	24264	D. R. Bedell, Main St., Andover.	3 " 15c....	The American Cereal Co., Peterboro', Ont.	'Victor brand'	" "	2.40

DISTRICT OF QUEBEC—C. E. ROY, INSPECTOR.

June 21	Oatmeal	668	Elz. Fortier et fils, Ste. Anne de Beaufre.	1 lb., 6c....	C. A. Paradis, Que .....	.....	Oat starch and tissues.	2.30
" 21	"	669	Simeon Ratte, Ste. Anne de Beaufre.	1 " 4c....	Langlois & Paradis, Que..	.....	" "	1.80
" 21	"	671	Louis Cote, Ste. Anne de Beaufre.	1 box, 10c....	T. Davidson & Co., Que.	.....	" "	1.65
" 27	"	672	Chas. Clouette, Beauport.	1 pkg., 10c....	Drouin et frere, Que .....	.....	" "	3.00
" 28	"	674	Theo. Lacombe, Chateau Richer.	1 lb., 5c....	J. B. Renaud & Co., Que.	.....	" "	2.10
" 28	"	676	Ed. Rheanne, Chateau Richer.	1 " 5c....	Unknown .....	.....	" "	1.60
July 2	"	682	Ber. Bourassa, St. Raymond.	1 " 4c....	N. Turcotte et Cie, Que....	" "	1.90
" 5	"	685	Jos. Lambert, St. Joseph Beauce.	2 " 15c....	Turcotte et frere, Que.....	" "	2.10

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"	5 Quaker Oats.....	686 A. Fortier et Cie, Beauceville.	1 pkg., 15c.	A. Carrier et fils, Lévis, Que.	"	2.75
"	5 Oatmeal.....	688 G. H. Lachance, Beauceville, West.	1 lb., 4c.	J. B. Renaud et Cie, Que.	"	1.60
"	11 ".....	689 Jos. Julian, Pont Rouge.	1 " 4c.	Unknown.....	"	1.75
"	19 ".....	706 Chas. Audet, St. Anselme.	1 " 4c.	Ogilvie, Montreal.....	"	0.80
"	19 ".....	707 J. M. Ouellet, St. Anselme.	1 " 4c.	Unknown.....	"	0.80

DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

June	21 Oatmeal.....	427 F. N. Giroux, Farnham.	1 lbs., 4c.	J. A. Mathewson & Co., Montreal.	Taken out of a flour barrel.	Oat starch and tissues.	2.05
"	18 Rolled Oats.....	438 T. A. Bourgault, Drummondville.	1 " 4c.	Denvers, Fletcher & Co., Montreal.	Taken out of a bin under shelves.	"	1.60
"	18 'Banner' Rolled Oats.....	439 N. H. Dubois, Actonvale.	1 box, 25c.	The American Cereal Co., Peterboro', Ont.	On one side of the package stamped No. 2.	"	2.10
"	19 Oatmeal.....	440 J. D. Lacerte, Plessisville.	1 lb., 4c.	Carter, Galbraith & Co., Montreal.	Taken from a drawer under the counter.	"	1.50
"	21 'Victor' Rolled Oats.....	441 Gendron, Demault & Co., Sherbrooke.	1 " " " "	The American Cereal Co., Peterboro', Ont.	Taken out of a 100 lb. bag and guaranteed pure by makers.	"	2.50
"	22 Quaker Oats.....	442 L. Moreau, St. Jean.	1 pkg., 15c.	" " " "	"	"	1.30
"	22 'Norka' Cooked Oats.....	443 R. Gould, St. Jean.	1 " 15c.	The Norka Food Co., Battle Creek, Michigan.	"	"	1.75
"	22 'Beaver' Rolled Oats.....	444 F. J. Bourassa et Cie., St. Jean.	1 " 25c.	P. McIntosh & Son, Toronto.	"	"	2.00
"	27 Oatmeal.....	445 H. Bisailon, St. Lambert.	1 lb., 6c.	Hudon, Hebert et Cie., Montreal.	Taken from a drawer under shelves.	"	2.00
"	27 ".....	446 P. Finch, St. Lambert.	1 lb., 6c.	Brodie & Harvie, Montreal.	Taken out of a 24 lb. bag. Stamped on pkg. "20 P 64"	"	1.85
"	27 Quaker Oats.....	447 J. G. Berthiaume, Longueuil.	1 " 10c.	The American Cereal Co., Peterboro', Ont.	"	"	2.50
"	27 Rolled Oats.....	448 M. Viger, Longueuil.	1 lb., 4c.	Portage la Prairie Flour Mills Co., Manitoba.	"	"	1.70
"	29 Banner Rolled Oats.....	449 Sorel Meal Market, Sorel.	1 pkg., 25c.	The American Cereal Co., Peterboro', Ont.	Stamped No. 1 on package.	"	2.00
"	29 Steam Cooked Oatmeal.....	450 Alf. Francoeur et Cie., Sorel.	1 " 15c.	The Hornbury's Oatmeal Co., New York.	Manfg. and guaranteed by the Clover Mills, Buffalo, N.Y.	"	1.35
"	29 Buffalo Rolled Oats.....	451 J. O. Fagnan et Cie., Sorel.	1 lb., 4c.	The Dowd Cereal & Milling Co., Pilot Mound, Man.	Taken from a drawer under shelves.	"	2.95
"	30 Rolled Oats.....	452 Paquette et Freres, St. Hyacinthe.	1 " 5c.	F. O. Lamarche, Berthierville, Que.	"	"	2.75
"	30 Quaker Oats.....	454 J. A. Laporte, Berthierville.	1 pkg., 10c.	The American Cereal Co., Peterboro'.	"	"	1.45

RESULTS OF EXAMINING 155 SAMPLES ROLLED OATS AND OATMEAL.—Continued.

DISTRICT OF MONTREAL. J. J. COSTIGAN, INSPECTOR.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.	Name and Address of Manufacturer or Furnisher.	Inspector's Report.	Microscopical Examination.	Grade Price.
1906								p.c.
June 22	Rolled Oats	27649	M. De Repentigny, 129 Wellington St., Montreal.	8c	Ogilvie Milling Co.,	.....	Oat starch and tissues.	1 95
" 22	"	27650	E. Tessier, 194 William St., Montreal.	7c	Not known.	.....	"	2 60
" 22	Oatmeal	27651	"	7c	"	.....	"	1 85
" 22	"	27652	Bertrand & Laplaine, De Lormier.	10c	"	.....	"	2 40
" 22	Rolled Oats	27653	"	7c	"	.....	"	1 85
" 22	"	27654	E. Ruby, De Lormier.	7c	"	Victor brand.	"	1 45
" 22	Oatmeal	27655	"	7c	"	.....	Oat and wheat starch.	2 20
" 25	Rolled Oats	27656	W. De Montigny, 464 Centre St., Montreal.	7c	"	.....	Oat starch and tissues.	2 25
" 25	"	27657	L. P. Lavoie, 3189 Notre Dame, Montreal.	7c	Brodie & Harvie, Montreal.	.....	"	2 10
July 5	Oatmeal	27658	Adam Lamy, 3555 Notre Dame, Montreal.	7c	Not known.	Sold from bulk.	"	2 50
" 5	Flaked Oats	27659	"	8c	"	.....	"	1 70
" 5	Rolled Oats	27660	O. Decarie et fils, 3435 Notre Dame, Montreal.	6c	"	Victor brand.	"	2 45
" 5	"	27661	L. Charbonneau, 144 St. John, Montreal.	7c	Brodie & Harvie, Montreal.	.....	"	1 50
" 5	Oatmeal	27662	"	7c	Laporte, Martin & Co., Montreal.	.....	"	1 85
" 5	Rolled Oats	27663	R. Jacobson, 142 St. Dominique, Montreal.	8c	"	.....	"	1 40
" 5	Oatmeal	27664	"	7c	Not known.	Sold from bulk.	"	2 70

DISTRICT OF OTTAWA—A. E. SANDERSON, INSPECTOR.

July	18	18 Rolled Oats	29314	T. Martin, 169 Rideau, 1 1/2 lbs., 5c.	Dowd Milling Co., Quyon, Que.	Out starch and tis-	2.90
"	18	"	29315	" " " 1 1/2 " 5c.	American Cereal Co., Peterboro', Ont.	" "	1.90
"	18	"	29316	A. Blyth, 69 William, Ot 1 1/2 " 5c.	Ottawa Milling Co., Ottawa	" "	2.20
"	18	Oatmeal	29317	" " " 1 1/2 " 5c.	" " "	" "	2.35
"	19	19 Rolled Oats	29322	Crowe & Co., 236 Bank, 1 1/2 " 5c.	" " " Victoria brand.	" "	1.00
"	19	Oatmeal	29323	" " " 2 " 7c.	Unknown	" "	1.85
"	19	19 Rolled Oats	29324	J. S. Martin, 310 Bank, 2 " 10c.	American Cereal Co., Peterboro', Ont.	" "	2.25
"	19	Oatmeal (coarse)	29325	" " " 2 " 10c.	Dowd Milling Co.	" "	2.40
"	19	" (fine)	29326	" " " 2 " 10c.	" "	" "	2.80
"	19	" (medium)	29327	" " " 2 " 10c.	" "	" "	1.75
"	19	"	29328	Millar & Co., 427 Bank, 2 " 10c.	Ottawa Milling Co., Ottawa Standard brand.	" "	2.10
"	19	19 Rolled Oats	29329	" " " 2 " 10c.	" " " 'K. Y.' brand.	" "	2.80
"	19	Oatmeal	29345	Allan & Co., Wellington, 2 " 6c.	McIntosh, Toronto.	" "	2.30
"	19	19 Rolled Oats	29346	" " " 2 " 6c.	W. H. Dwyer, Ottawa.	" "	1.90
"	20	"	29352	Mayberry & Co., Pres- 2 " 8c.	McIntosh, Toronto.	" "	1.85
"	20	Oatmeal	29353	" " " 2 " 8c.	" "	" "	2.00

DISTRICT OF KINGSTON—J. HOGAN, INSPECTOR.

June	18	18 Flaked Oats	29448	J. H. P. Young, Front 1/2 lbs., 45c.	Peterboro' Cereal Co	Out starch and tis-	2.35
"	18	18 Rolled Oats	29451	J. P. McKeeny, Port 3 " 15c.	A. R. Roos, Embro, Ont.	" "	1.50
"	19	"	29457	D. Adams, Kent St., 6 " 15c.	Flavelle Milling Co., Lind-	" "	1.35
"	19	Oatmeal	29458	" " " 6 " 15c.	say, Ont.	" "	1.50
"	19	"	29462	J. Brown, Lindsay, Ont. 6 " 15c.	" " "	" "	1.75
"	19	19 Rolled Oats	29467	J. Sutherland, George St., 6 " 20c.	American Cereal Co., Peter-	" "	1.20
"	19	Oatmeal	29470	Mason Co., Peterboro, Ont 6 " 10c.	boro', Ont.	" "	2.40
"	19	19 Rolled Oats	29471	" " " 3 " 10c.	Not known	" "	1.05
"	19	Oatmeal	29474	W. H. Hamilton, Peter- 3 " 15c.	American Cereal Co., Peter-	" "	1.25
"	19	19 Rolled Oats	29475	" " " 3 " 15c.	boro', Ont.	" "	1.50
"	19	Oatmeal	29476	J. Hill, Peterboro', Ont. 3 " 10c.	" " "	" "	1.80
"	19	19 Rolled Oats	29461	J. Brown, Lindsay, Ont. 6 " 15c.	Flavelle Milling Co., Lind-	" "	1.15
				say, Ont.			

RESULTS OF EXAMINING 155 SAMPLES ROLLED OATS AND OATMEAL—Continued.

DISTRICT OF TORONTO J. J. COSTIGAN, INSPECTOR.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.	Name and Address of Manufacturer or Furnisher.	Inspector's Report.	Microscopical Examination.	Crude Fibre.
1906.								p.e.
June 19	Flaked Oats.....	27633	H. Tolchard, 518 Yonge St., Toronto.	13c.	P. McIntosh & Son, Toronto	.....	Oat starch and tissues.	1.50
"	Pan Dried Oats.	27634	F. Patience, 419 Yonge St., Toronto.	10c.	Tillson Co., Ltd., Tillsonburg, Ont.	.....	"	2.40
"	Oatmeal.....	27635	J. Blood, Yonge Street, Toronto.	8c.	P. McIntosh & Son, Toronto	.....	"	1.35
"	Flaked Oats.....	27636	James Miller, 336 Queen St., east, Toronto.	7c.	Lawson Milling Co., Toronto	.....	"	1.35
"	Oatmeal.....	27637	" " " "	7c.	" " " "	.....	"	1.60
"	Rolled Oats.....	27638	" " " "	25c.	Tillson Co., Ltd., Tillsonburg, Ont.	Premium brand. Prize in each package.	"	2.50
"	Flaked Oats.....	27639	Dallan Bros., Queen St., east, Toronto.	8c.	Not known.	.....	"	2.00
"	Oatmeal.....	27640	" " " "	7c.	" " " "	.....	"	2.40
"	Rolled Oats.....	27641	H.C. Hall, 252 Queen St., east, Toronto.	8c.	Parkinson Cereal Co.	.....	"	1.50
"	"	27643	A. W. Etwell, 161 McCaul St., Toronto.	8c.	Ogilvie Milling Co.	.....	"	2.85
"	Flaked Oats.....	27644	H. M. McCulloch, 151 McCaul St., Toronto.	10c.	Fairles Milling Co.	.....	"	1.50
"	Rolled Oats.....	27645	" " " "	10c.	Not known	Victor brand.....	"	2.20
"	Oatmeal.....	27646	" " " "	10c.	" " " "	.....	"	2.50
"	"	27647	T. Eaton Co., Ltd., Yonge St., Toronto.	6c.	" " " "	White Swan brand (coarse)....	"	1.75
"	"	27648	" " " "	6c.	Robert Gray Co., millers..	"	1.45

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DISTRICT OF LONDON—T. KIDD, INSPECTOR.

June 25	14	Rolled Quaker Oats.....	30099	Charles A. Nairn, Gode- rich, Ont.	10c.	American Cereal Co., Peter- boro', Ont.	Oat starch and tissues.	1.50
" 28	14	Rolled Oats.....	30109	R. G. Smith, St. Mary's, Ont.	5c.	Tillson Co., Tillsonburg, Ont.	.....	" "	1.30
" 30	14	Quaker Oats..	30120	Scandrett Bros., London, Ont.	10c.	American Cereal Co., Peter- boro', Ont.	.....	" "	1.80
" 30		Corn Flakes.....	30121	" " " "	10c.	Sanitas Nut Food Co., Ltd., Battle Creek, Mich.	Called toasted corn flakes.....	Mostly oat starch and tissues.	2.10
July 5		Pan Dried Oats	30122	Stuebling & Co., Berlin, Ont.	10c.	Tillson Co., Tillsonburg, Ont.	.....	Oat starch and tissues.	1.85
" 5		Egg-O-Sec.....	30123	Dunke & Co., Berlin, Ont.	10c.	Randal & Rose, Wholesale grocers, Berlin, Ont.	.....	Mostly oat starch and tissues.	1.40
" 5		Norka.....	30124	" " " "	15c.	Ebbly, Blair & Co., whole- sale grocers, Toronto.	Made in Battle Creek, Mich....	" " "	2.30
" 5		Jersey Oats	30125	Deans & Walker, Galt, Ont.	15c.	McIntosh & Son, Toronto	Called Crown Brand Jersey Oats.	Oat starch and tissues.	1.50
" 6		Rolled Oats	30127	Beck & Schell, Berlin, Ont.	5c.	" " " "	.....	" " "	1.50
June 25		Orange Meat.....	30104	Thomas Daily, Seaforth, Ont.	15c.	Frontenac Cereal Co., Kingston.	Called Orange Meat.	" " "	2.25

DISTRICT OF CALGARY—W. FLETCHER, INSPECTOR.

July 24		Rolled Oats.....	28664	Hudson Bay Co., retail, Calgary.	3 pkgs., 60c.	The American Cereal Co., Peterboro', Ont.	.....	Oat starch and tis- sues.	2.40
" 24		"	28667	G. F. & J. Galt, whole- sale, Calgary.	1 " 25c	Tillson's, Tillsonburg, Ont.	.....	" "	2.10
" 24		"	28670	Codville, Smith Co., Cal- gary.	1 " 5c.	Brackman Keer, Strath- cona, Alberta.	.....	" "	1.60
" 24		"	28673	Campbell, Wilson & 1 Horn, Calgary.	pkg., 25c.	American Cereal Co., Pe- terboro', Ont.	.....	" "	2.05
" 26		Quaker Oats.....	28675	Hudson Bay Co., Ed- monton.	3 " 55c.	" " " "	.....	" "	1.50
" 26		"	28678	Revillon Bros., Edmon- ton.	3 " 60c.	" " " "	.....	" "	0.25
" 26		Rolled Oats.....	28679	McDougall & Secord, Edmonton.	2 lbs. 10c.	Brackman Keer, Strath- cona, Alberta.	.....	" "	0.20
" 27		Oatmeal.....	28685	J. H. Morris, Edmonton.	3 " 35c.	" " " "	.....	" "	1.25

RESULTS OF EXAMINING 155 SAMPLES ROLLED OATS AND OATMEAL—*Concluded.*

DISTRICT OF BRITISH COLUMBIA—E. B. PARKINSON, INSPECTOR.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.	Name and Address of Manufacturer or Furnisher.	Inspector's Report.	Microscopical Examination.	Crude Fibre.
1906.								p. c.
June 20	Extra Cream Rolled Oats.	28155	Brackman & Kerr, Van- couver.	7 lbs. 35c.	Vendors.	.....	Oat starch and tissues.	2·10
"	20 Coarse Oatmeal	28156	"	10 lbs. 35c.	"	.....	"	1·90
"	20 Fine Oatmeal	28157	"	10 " 35c.	"	.....	"	1·50
"	20 Standard Oatmeal	28158	"	10 " 35c.	"	.....	"	2·35
"	20 Quaker Rolled Oats	28159	Hudson Bay Co., Van- couver.	6 " 40c.	American Cereal Co., Pe- terboro', Ont.	.....	"	1·30
"	21 Rolled Oats	28164	A. Desbrisay, Van- couver.	7 " 30c.	Brackman & Kerr, Van- couver.	.....	"	2·10
"	21 Saxon Rolled Oats	28167	McDonell & Vannis, Van- couver.	5 " 30c.	American Cereal Co., Pe- terboro', Ont.	.....	"	2·25
"	21 Victoria Rolled Oats	28168	J. Deal, Van- couver.	7 " 25c.	"	.....	"	1·60

APPENDIX D.

BULLETIN No. 128—COMMON SALT.

OTTAWA, October 25, 1906.

W. J. GERALD, Esq., Deputy Minister of Inland Revenue.

SIR,—In accordance with your authorisation of August 14 last, a collection of table and dairy salt samples was made in August and September last, the number and the localities where collected being as follows :—

Inspection Districts.	No. of Samples.
Nova Scotia.....	5
Prince Edward Island.....	2
New Brunswick.....	5
Quebec.....	8
St. Hyacinthe.....	8
Montreal.....	10
Ottawa.....	8
Kingston.....	8
Toronto.....	10
London.....	8
Manitoba.....	6
Calgary.....	4
British Columbia.....	5
Total.....	87

The origin of these samples and the results they yielded on analysis to Mr. J. G. A. Valin, Assistant Analyst, are given in the table appended to this report. The percentage of chloride of sodium contained in them varies from 93 to 98, with corresponding differences as regards the quantities of moisture and impurities present. It is probably inadmissible to call the latter adulterations, the limits of variability for salt not having been yet established in Canada. In the United States a standard was adopted on June 26, 1906, by circular No. 19 from the office of the Secretary of Agriculture, which reads as follows :—

‘Table salt, dairy salt, is fine grained crystalline salt, containing, on a water free basis, not more than one and four tenths (1·4) per cent of calcium sulphate (CaSO_4), nor more than five tenths (0·5) per cent of calcium and magnesium chlorides (CaCl_2 and MgCl_2) nor more than one tenth (0·1) per cent of matters insoluble in water.’

It is not necessary to recalculate the results given in the table and state them on a dry basis in order to see that a very large proportion of the sample described would not come up to the United States standard. Taking the figures as they stand in the table there are at least one-half of the samples which would not do so. It is enough for the present to call attention to this fact in order that manufacturers or furnishers may aim at supplying an article of a higher degree of purity. On the other hand it is satisfactory to note that many of the samples of Canadian origin fulfil the requirements of the United States Department of Agriculture.

Among the samples examined there are six which contain foreign substances insoluble in water, and which have apparently been added to prevent the particles of salt from caking together. It does not appear that this constitutes adulteration, for the Act provides that the usual definitions shall not apply, ‘if any matter or ingredient not injurious to health has been added to the food or drug because the same is required for the production or preparation thereof as an article of commerce in a fit state for carriage or consumption, and not fraudulently to increase the bulk weight or measure of the food or drug, or to conceal the inferior quality thereof.’ Nevertheless it would seem to be necessary that these brands should each, on selling, be labelled as a mixture.

I have the honour to be, sir, your obedient servant,
THOMAS MACFARLANE, *Chief Analyst.*

7-8 EDWARD VII., A. 1908

RESULTS of Examining 87 Samples

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906.			<i>District of Nova Scotia— R. J. Waugh, Inspector.</i>		Cts.	
Aug. 28	Table Salt.....	27476	Jos. Scott, Halifax, N.S..	1 bag.	10	Snow Flake Salt Co., New York.
" 28	"	27477	H. Wentzell & Co., Halifax, N.S.	1 "	5	Canadian Salt Co., Windsor, Ont.
" 31	"	27486	Wm. Law & Co., Yarmouth, N.S.	1 "	5	" ..
" 31	"	27487	Cain Bros., Yarmouth, N.S.	1 "	10	" ..
" 29	"	27481	J. J. Skerry, Halifax, N.S.	1 "	5	Grant Oxley, Halifax ..
			<i>District of P. E. Island— T. Moore, Inspector.</i>			
Aug. 23	Table Salt.....	23324	R. F. Maddigan, Charlottetown.	3 tins.	30	Dearborn & Co., St. John, N.B.
" 23	"	28325	John McKenna, Charlottetown.	3 bags	15	Thomson Bros., St. Clair, Michigan, U.S.
			<i>District of New Brunswick— J. C. Ferguson, Inspector.</i>			
Aug. 24	Table Salt.	24273	Two Barkers, Ltd., 100 Princess St., St. John, N.B.	1 bag.	12	Canadian Salt Co., Ltd., Windsor, Ont.
" 24	"	24274	W. A. Simonds, 89 Union St., St. John, N.B.	3 pkgs	30	Diamond Crystal Salt Co., St. Clair, Michigan, U.S.
" 24	Salt, English Dairy..	24275	P. Nase & Son, Cor. Main and Bridge Sts., St. John, N.B.	1 box.	20	Gaudy & Hallison, Packers and Furnishers, St. John, N.B.
" 24	Dairy Salt.....	24276	D. J. Purdy, 325 Main St., north end, St. John, N.B.	3 pts.	5	Imported from Liverpool, England.
" 24	Table Salt.....	24277	Charles F. Francis & Co., 141 Charlotte St., St. John, N.B.	3 pkgs	30	Heckers, Boston, Mass., U.S.A.
			<i>District of Quebec— C. E. Roy, Inspector.</i>			
Aug. 29	Table Salt, Windsor.	714	J. E. Potvin, Roberval, Que.	1 bag.	5	Côté et Boivin et Cie., Roberval, Que.
" 29	"	715	Jos. Brassard, Roberval, Que.	1 "	5	N. Rioux et Cie., Quebec ..
" 30	"	717	Ant. Amante, Chicoutimi, Que.	1 "	5	Côté, Boivin, et Cie., Chicoutimi, Que.
" 30	Dairy Salt.....	719	J. A. Pelletier, Chicoutimi, Que.	1 "	5	N. Rioux et Cie., Quebec ..
" 31	Brussels Salt.	721	Neree Simard, Bagotville, Que.	1 "	5	A. Joseph & Sons, Quebec.
Sept. 10	Dairy Salt... ..	724	J. F. Saindon, Rivière du Loup, Fraserville, Que.	1 "	5	Not known.....
" 11	Table Salt	727	Abraham Caron, Rimouski, Que.	1 "	5	N. Turcotte et Cie., Quebec
" 14	Dairy Salt.....	733	M. Thibaudeau, Quebec...	1 "	5	D. Rattray & Son, Quebec.

SESSIONAL PAPER No. 14

of Common Salt.

Inspector's Report.	RESULTS OF ANALYSIS.						Number of Sample.	Remarks by the Analyst.
	Moisture.	Residue In-soluble in Water.	Calcium Sulphate.	Calcium Chloride.	Magnesium Chloride.	Sodium Chloride; by difference.		
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.		
The vendor is a wholesale dealer . . .	0·40	0·00	0·72	0·65	0·07	98·16	27476	The insoluble residue is starch.
" "	0·37	0·00	1·36	0·88	0·20	97·19	27477	
" "	0·55	0·00	0·91	0·24	0·00	98·30	27486	
Labelled Windsor fine table salt	0·36	0·00	1·15	0·53	0·00	97·96	27487	
Labelled peerless crystal salt for family and dairy use.	0·10	0·00	0·91	0·46	0·16	98·37	27481	
National table salt does not cake; for the best and strongest dairy salt ask for Dearborn's premium dairy salt.	0·90	3·66	1·56	0·71	0·00	93·17	28324	
Crown table and dairy salt	0·24	1·46	1·05	0·73	0·00	96·52	28325	
Labelled Windsor table salt; purest and best.	0·58	0·00	1·42	0·27	0·00	97·73	24273	
Labelled scientifically made. Manufactured by Diamond Crystal Salt Co., St. Clair, Mich.; prepared shaker salt for the table; always dry.	0·24	1·33	0·54	0·75	0·00	97·14	24274	
Labelled English dairy salt	0·35	0·00	1·57	0·18	0·00	97·90	24275	
In bulk; Liverpool fine salt; table or dairy use.	0·43	0·00	1·77	0·30	0·00	97·50	24276	
Labelled Heckers' opal table salt; in moisture proof parafine bag, especially for ships and seaside use.	0·48	0·68	1·63	0·16	0·47	96·58	24277	
.....	0·24	0·00	0·64	0·59	0·53	98·00	714	
.....	0·48	0·28	1·70	0·30	0·49	96·75	715	
.....	0·20	0·00	1·02	0·24	0·00	98·54	717	
.....	0·32	0·00	1·84	1·00	0·00	96·84	719	
.....	0·44	0·00	1·46	0·32	0·00	97·78	721	
.....	0·32	0·00	1·66	0·71	0·17	97·14	724	
.....	0·32	0·00	1·26	0·48	0·24	97·70	727	
.....	0·30	0·00	1·84	0·76	0·17	96·93	73,	

RESULTS of Examining 87 Samples

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of St. Hyacinthe— J. C. Rouleau, Inspector.</i>		Cts.	
Aug. 20	Table Salt.....	468	Paul Landry, Sorel, Que.	1 bag.	5	The Canadian Salt Co., Windsor, Ont.
" 21	Dairy Salt.....	469	F. O. Lamarche, Berthier-ville, Que.	1½ lb.	.....	The Dominion Salt Agency, London, Ont.
" 21	Table Salt.....	470	Dlle. A. Racette, L'Epiphanie, Que.	1 bag.	5	The Canadian Salt Co., Windsor, Ont.
" 21	Table Salt, 'Franklin'	471	C. Barette, Joliette, Que..	2 lbs.	.....	Verret, Stewart & Co., Montreal.
" 21	Dairy Salt.	472	L. A. Chartier, Joliette, Que.	2 lbs.	.....	The Canadian Salt Co., Windsor, Ont.
" 22	Table Salt, 'Snow Flake.'	473	Bureau et Cie., Shawenegan Falls, Que.	1 box.	20	The Snow Flake Salt Co., New York.
" 24	Dairy Salt.....	474	W. Martel et Cie., Three Rivers, Que.	1 bag.	20	The Canadian Salt Co., Windsor, Ont.
" 25	Table Salt.....	475	J. B. St. Pierre, St. Hyacinthe, Que.	1 "	5	E. Benoit, St. Hyacinthe.
			<i>District of Montreal-- J. J. Costigan, Inspector.</i>			
Aug. 28	Table Salt.....	31516	H. F. Barre, 4818 St. Catherine, Maisonneuve, Que.	3 bags	15	Canadian Salt Co., Windsor Ont.
" 28	Dairy Salt.....	31517	Joseph Dubois, 554 Notre Dame, Maisonneuve, Que.	3 lbs.	5	Hudon et Orsali, Montreal.
" 31	Salt.....	31518	Henry Russell, 2663 St. Catherine, Montreal.	2 lbs.	4	Hudon, Hebert et Cie., Montreal.
" 31	"	31519	English Provision Co., 681 St. Catherine, Montreal.	2 lbs.	2	Not known.
" 31	"	31520	Antoine St. Denis, St. Anne de Bellevue, Que.	1 bag.	5	Canadian Salt Co. Windsor, Ont.
Sept. 6	Dairy Salt.....	31521	W. P. Brennan, St. Therèse de Blainville, Que.	3 lbs.	3	Verret, Stewart & Co., Montreal.
" 6	"	31522	H. J. Giles & Bro., Lachute Que.	3 "	15	Canadian Salt Co., Windsor, Ont.
" 11	"	31523	McRae Bros., Richmond, Que.	3 "	15	" "
" 11	Coarse Salt.	31524	J. Brown, Huntingdon, Que.	3 "	5	Not known.
" 11	Dairy Salt.	31525	E. C. McCoy, Huntingdon, Que.	3 "	5	"
			<i>District of Ottawa—A. E. Sanderson, Inspector.</i>			
Sept. 10	Table Salt.....	29364	Alex. Larose, 128 Queen St., west, Ottawa.	1 bag.	10	Canadian Salt Co., Ltd., Windsor, Ont.
" 11	"	29374	F. & J. Castle, wholesale, Queen St., Ottawa.	1 "	10	" " ..
" 11	"	29375	S. Daniels, O'Connor St., Ottawa.	1 "	10	" " ..
" 11	Dairy Salt.....	29376	" " " "	1 gall.	10	Bate & Sons, Ottawa.....
" 11	Table Salt.....	29377	C. B. McLean, Bank St., Ottawa.	1 bag.	10	Canadian Salt Co., Ltd., Windsor, Ont.
" 11	"	29378	Geo. H. Hopper, Bank St., Ottawa.	1 "	10	" " ..

SESSIONAL PAPER No. 14
of Common Salt—Continued.

Inspector's Report.	RESULTS OF ANALYSIS.						Number of Sample.	Remarks by the Analyst.
	Moisture.	Residue In-soluble in Water.	Calcium Sulphate.	Calcium Chloride.	Magnesium Chloride.	Sodium Chloride; by difference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
Included in the Department sample...	0·32	0·00	0·78	0·63	0·00	98·27	468	
Taken out of a 200-lb. bag.....	0·22	0·00	0·81	0·81	0·00	98·16	469	
Same as No. 468.....	0·17	0·00	0·81	0·39	0·17	98·46	470	
.....	0·54	0·00	0·40	0·42	0·00	98·64	471	
Out of a 300-lb. barrel; factory filled .	0·30	0·00	0·95	0·94	0·00	97·81	472	
.....	0·48	0·60	0·36	0·95	0·70	96·91	473	
.....	0·20	0·00	1·29	0·46	0·00	98·05	474	
.....	0·24	0·00	1·22	0·78	0·02	97·64	475	
.....								
Windsor table salt.	0·78	0·00	1·19	0·78	0·00	97·25	31516	
.....	0·64	0·68	1·15	0·85	0·00	96·68	31517	
Dairy salt.....	4·10	0·15	1·53	0·26	0·71	93·25	31518	
"	1·95	0·00	1·53	0·94	0·00	92·58	31519	
Table salt.	0·25	0·00	1·36	0·60	0·00	97·79	31520	
Put up in 50-lb. sacks. Stamped fac- tory filled; Franklin, Liverpool.	0·40	1·15	1·63	0·46	0·00	97·36	31521	
Put up in 50-lb. sacks.....	0·18	0·00	1·14	0·46	0·60	98·22	31522	
From 20-lb. bag.	0·20	0·00	1·02	0·41	0·11	98·26	31523	
.....	1·20	0·38	1·14	0·10	0·02	97·16	31524	
Factory filled; Liverpool	0·30	0·00	1·73	0·69	0·00	97·28	31525	
.....								
Labelled purest and best Windsor table salt.	0·16	0·00	1·22	0·91	0·18	97·53	29364	
"	0·32	0·00	1·16	0·32	0·23	97·97	29374	
"	0·32	0·00	1·02	0·34	0·14	98·18	29375	
.....	0·31	0·30	1·68	0·50	0·00	97·21	29376	
Labelled purest and best Windsor table salt.	0·22	0·00	1·19	0·82	0·20	97·57	29377	
"	0·20	0·00	1·43	0·18	0·00	98·19	29378	

7-8 EDWARD VII., A. 1908

RESULTS of Examining 87 Samples

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906.			<i>District of Ottawa—Con.</i>		Cts.	
Sept. 11	Table Salt.....	29379	A. J. Warnock, Bank St., Ottawa.	1 lbs.	10	A. J. Warnock, Bank St., Ottawa.
" 11	Dairy Salt.....	29380	P. D. Herbert, Bank St., Ottawa.	3 lbs.	10	Bate & Sons, Ottawa.....
			<i>District of Kingston—J. Hogan, Inspector.</i>			
Aug. 21	Table Salt.....	29484	C. S. Litton, Alfred St., Kingston.	1 bag	5	Canadian Salt Co., Ltd., Windsor, Ont.
" 21	"	29487	W. J. Nesbitt, Johnston St., Kingston.	1 "	5	" " ..
" 21	"	29492	H. A. Smith, Brock St., Kingston.	1 "	5	" " ..
" 21	"	29496	John Gilbert, Gore St., Kingston.	1 "	5	" " ..
" 21	"	29497	F. Clow, Earl St., Kingston	1 "	5	" " ..
" 21	"	29498	R. Glover " "	1 "	5	" " ..
" 21	"	29499	L. Murphy, King St., Kingston.	1 "	5	" " ..
" 21	"	29500	P. Wilmot, King St., Kingston.	1 "	5	" " ..
			<i>District of Toronto—T. Kidd, Acting Inspector.</i>			
Sept. 4	Table Salt.....	30174	Abbott & Hogart, 474 King St., East, Toronto.	1 bag.	5	Canadian Salt Co., Ltd., Windsor, Ont.
" 4	Salt	30176	J. F. Morrish, 237 Yonge St., Toronto.	2 bots.	5	Toronto Salt Works, Chas. Cooper, Manager.
" 5	"	30178	Wilber Eddy, 365½ Yonge St., Toronto.	1 lb.	10	Toronto Salt Works, Toronto.
" 6	Fine Salt.....	30184	Kelley Bros., 90 Queen St., Toronto.	1 tin.	10	James Lumbers, wholesale, Toronto.
" 6	Salt	30186	H. Wellstead, 185 King St., Toronto.	2 lbs.	2	Dominion Salt Agency, London, Ont., C. R. Cooper, Manager.
" 6	Crystal Salt	30188	Michie & Co., 7 King St., West, Toronto.	2 "	10	Diamond Salt Co., St. Clair, Michigan.
" 6	Acme Salt	30189	" " "	3 "	10	Toronto Salt Works, 128 Adelaide St., East, Toronto.
" 7	Table Salt.....	30192	George Ratcliff, 864 Yonge St., Toronto.	5 "	10	Diamond Crystal Salt Co..
" 7	"	30193	J. A. Johnston, 775 Yonge St., Toronto.	3 "	10	Leroy, New York.....
" 7	Acme Salt	30194	R. Higgins & Son, 802 and 804 Yonge St., Toronto.	3 "	10	Acme Salt Co., 128 Adelaide St., Toronto.
			<i>District of London—T. Kidd, Inspector.</i>			
Aug. 24	Table Salt.....	30153	Canadian Salt Co., Windsor, Ont.	3 lbs.	5	Vendors
" 24	Dairy Salt.....	30154	" " "	3 "	5	"
" 24	Packer's Salt	30155	" " "	3 "	5	"

SESSIONAL PAPER No. 14
of Common Salt—Continued.

Inspector's Report.	RESULTS OF ANALYSIS.						Number of Sample.	Remarks by the Analyst.
	Moisture.	Residue In-soluble in Water.	Calcium Sulphate.	Calcium Chloride.	Magnesium Chloride.	Sodium Chloride; by difference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
Labelled purest and best Windsor table salt.	0.40	0.00	1.16	0.00	0.36	98.08	29379	
.....	0.48	0.34	1.53	0.10	0.07	97.48	29380	
.....								
.....	0.20	0.00	0.83	0.10	0.00	98.85	29484	
.....	0.22	0.00	0.81	0.39	0.00	98.58	29487	
.....	0.19	0.00	1.08	0.51	0.00	98.22	29492	
.....	0.36	0.00	0.61	0.10	0.00	98.93	29496	
.....	0.24	0.00	0.91	0.45	0.00	98.40	29497	
.....	0.26	0.00	1.46	0.44	0.00	97.84	29498	
.....	0.14	0.00	0.68	0.32	0.00	98.86	29499	
.....	0.10	0.00	0.61	0.54	0.00	98.75	29500	
.....								
.....	0.16	0.00	0.88	0.71	0.54	97.71	30174	
Said to be made in Windsor; called Windsor salt.	0.24	0.00	1.22	0.51	0.37	97.66	30176	
.....	1.36	0.00	0.61	0.50	0.00	97.53	30178	
Called Alvena salt; made by W. H. Flett, Liverpool, Eng.	0.60	0.00	1.26	0.08	0.28	97.78	30184	
Made in Sarnia, Ont.	0.22	1.51	1.56	0.16	0.08	96.47	30186	
.....	0.06	1.70	0.80	0.21	0.00	97.23	30188	
A fine table salt; called Acme salt....	0.44	1.52	1.08	0.75	0.18	96.03	30189	Insoluble residue starch.
.....	0.18	1.52	0.83	0.74	0.16	96.55	30192	
Branded pure salt; called Leroy brand; made in Leroy, N.Y.	0.50	1.05	1.40	0.10	0.07	96.88	30193	Starch in insoluble residue.
Branded pure and will not harden....	0.50	1.54	1.50	0.0	0.00	96.46	30194	Insoluble residue is starch.
.....								
.....	2.20	0.00	1.36	0.88	0.00	95.56	30153	
.....	0.40	0.00	0.54	0.59	0.00	98.47	30154	
.....	0.78	0.00	1.25	0.65	0.00	97.32	30155	

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RESULTS of Examining 87 Samples

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of London—Con.</i>		Cts.	
" 25	Dairy Salt.....	30162	George A. Young, Chat-ham, Ont.	1 jar.	12	Western Salt Co., Moore-town, Ont.
" 25	"	30163	Edward O'Flaherty, Strat-ford, Ont.	3 lbs.	5	Dominion Salt Co., Lon-don, Ont.
" 27	Coarse Salt.....	30165	Western Canada Flour Mills Co., Goderich, Ont.	2 "	5	Vendors.....
" 27	Common Salt.....	30166	J. W. Irwin, Clinton, Ont.	2 "	5	Richard Ransford, Clinton, Ont.
" 28	Medium Fine Salt...	30169	W. E. Kerslake, flour and feed merchant, Seaforth, Ont.	2 "	5	Dominion Salt Co. Agency, London, Ont.
			<i>District of Manitoba—W. M. Conklin, Inspector.</i>			
Oct. 17	Salt, Cerebos.....	25799	K. McKenzie & Co., Win-nipeg.	1 lb.	10	Cerebos, Ltd., London, Eng.
" 17	Salt.....	25800	Campbell Bros. & Wilson, Winnipeg.	3 "	.....	The Canadian Salt Co., Windsor, Ont.
" 17	Dairy Salt.....	25902	J. R. Cole, St. Boniface...	2½ "	.....	" "
" 17	Salt.....	25901	Hicks Bros., Winnipeg...	3 "	.....	" "
" 17	Dairy Salt.....	25903	T. Pelletier, St. Boniface	2½ "	.....	Port Huron Salt Co., Port Huron, Mich.
" 17	"	25904	J. L. Collin, St. Boniface	2½ "	.....	The Canadian Salt Co., Windsor, Ont.
			<i>District of Calgary—W. Fletcher Inspector.</i>			
Sept. 12	Table Salt....	28688	G. F. & J. Galt, wholesale, Calgary.	3 sa'ks	15	Canadian Salt Co., Wind-sor, Ont.
" 12	"	28689	Codville, Smith Co., wholesale, Calgary.	3 "	15	Western Salt Co., Moore-town, Ont.
" 12	"	28690	Campbell, Wilson & Horne, wholesale, Calgary.	3 "	15	Canadian Salt Co., Wind-sor, Ont.
" 12	"	28691	A. Newham, retail, Cal-gary.	3 "	30	" "
			<i>District of British Columbia—E. B. Parkinson, In-spector.</i>			
Aug. 29	Table Salt...	28175	Kelly, Douglas & Co., Ltd., wholesale, Vancouver, B.C.	3 sa'ks	5	Worcester Salt Co., New York, U.S.

SESSIONAL PAPER No. 14
of Common Salt—*Continued.*

Inspector's Report.	RESULTS OF ANALYSIS.						Number of Sample.	Remarks by the Analyst.
	Moisture.	Residue In-soluble in Water.	Calcium Sulphate.	Calcium Chloride.	Magnesium Chloride.	Sodium Chloride; by difference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
Called extra salt and put up in glass bottles.	0.20	1.00	0.91	0.84	0.00	96.15	30162	The chloride of sodium was estimated directly in this sample. The insoluble is mostly alumina and phosphate. There is an excess of sulphuric acid which is no doubt combined with alumina.
Manufactured by Dominion Salt Co..	1.60	0.00	1.44	0.92	0.00	96.04	30163	
Manufactured by vendors.	4.64	0.00	1.52	0.84	0.00	93.00	30165	
" " vendor	1.44	0.31	1.22	0.23	0.04	96.76	30166	
Made in Stapleton, near Clinton, Ont.	1.70	0.19	1.33	0.10	0.04	96.64	30169	
.....	0.52	6.40	0.14	0.00	0.00	91.50	25799	
.....	0.12	0.00	0.71	0.49	0.00	98.68	25800	
.....	0.08	0.00	1.02	0.24	0.00	98.66	25902	
.....	0.64	0.10	1.93	0.33	0.00	97.00	25901	
.....	0.80	0.00	1.66	0.23	0.00	97.31	25903	
.....	0.30	0.00	1.08	0.19	0.00	98.43	25904	
.....	0.20	0.00	1.22	0.79	0.22	97.57	28688	
.....	0.28	0.00	0.81	0.13	0.43	98.35	28689	
.....	0.24	0.00	1.50	0.16	0.25	97.85	28690	
.....	0.18	0.00	1.29	0.74	0.12	97.67	28691	
Worcester salt is made in such a way that it is impossible for it to be unclean or impure. While, best of all, it can be sold to families at about the same price as any other, and is stronger than other kinds. It is really most economical.	0.44	0.00	1.88	0.76	0.16	96.76	28175	

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RESULTS of Examining 87 Samples

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of British Columbia</i> —Con.		Cts.	
Aug. 29	Dairy Salt	28178	The Hudson Bay Co., wholesale merchants, Vancouver, B.C.	3 lbs.	5	W. A. Anderson, agent, Vancouver, B.C.
" 29	"	28179	E. W. Leeson Co., whole- sale grocers, Vancouver, B.C.	2 "	10	Union Pacific Salt Co., San Francisco, Cal.
" 30	Table Salt	28182	The London Grocery, re- tail, Granville St., Vancouver, B.C.	3 "	10	The Canadian Salt Co., Windsor, Ont.
" 30	"	28184	J. F. May, retail, Pender St., Vancouver, B.C.	1 tin.	20	Cerebos, Ltd., Newcastle- on-Tyne and London..

SESSIONAL PAPER No. 14
of Common Salt.—*Concluded.*

Inspector's Report.	RESULTS OF ANALYSIS.						Number of Sample.	Remarks by the Analyst.
	Moisture.	Residue In soluble in Water.	Calcium Sulphate.	Calcium Chloride.	Magnesium Chloride.	Sodium Chloride ; by difference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
Australian dairy salt ; did not know manufacturer. No brand or mark on sacks.	0.28	0.38	1.03	0.39	0.02	97.90	28178	
Union Pacific Salt Co., 'Eagle Brand.' Guaranteed dairy salt.	0.14	0.00	0.47	0.41	0.00	98.98	28179	
'Windsor Brand.' This salt consists of purely sifted natural crystals, and is infinitely superior to the ground salt heretofore sold. It is absolutely pure and will not cake like other salt in damp weather.	0.32	0.00	1.63	0.02	0.00	98.03	28182	
'Cerebos salt' brand contains among other ingredients, mixed phosphates, constituting the food strength of bran (usually thrown away), forming the substance of bone, brain and nerve.	0.80	*5.82	0.96	0.00	0.00	92.20	28184	Total 99.78. This residue contains phosphate and *5.82 alumina, Na Cl. was determined directly in this sample.

APPENDIX E.

BULLETIN No. 129—TOMATO CATSUP.

OTTAWA, December 15, 1906.

W. J. GERALD, Esq., Deputy Minister of Inland Revenue.

SIR, —I beg to submit the following report regarding the collection of samples of tomato catsup which was authorized by you in August last. The following list gives the number of samples and where collected :—

Inspection District.	No. of Samples.
Nova Scotia	3
Prince Edward Island	2
New Brunswick.. . . .	3
Quebec	4
St. Hyacinthe.	4
Montreal	6
Ottawa	5
Kingston	4
Toronto	5
London	4
Manitoba	4
Calgary	2
British Columbia	3
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All the details concerning these samples and their examination in this laboratory are given in the tabular statement appended to this report, in which I have also incorporated my remarks regarding the results of the analyses. I have inclined to the opinion that those samples, in the manufacture of which a dye has been used, are ‘adulterated according to the Act.’ This judgment would not be based upon the injurious nature of the dye, but because its use is prohibited by the Adulteration Act. Section 1 (c) (8) of the latter provides that ‘food shall be deemed to be adulterated within the meaning of this Act, if it is so coloured or coated or polished or powdered that damage is concealed, or if it is made to appear better or of greater value than it really is.’ According to information obtained from manufacturers, the use of a dye is unnecessary when the catsup is made from fresh tomatoes. It is when the fruit is ‘out of season’ and the pulp has to be kept in stock for a considerable time that the colour suffers and the use of a dye becomes necessary. In such cases it might be reasonably inferred that they have been coloured to conceal damage, or that the dye has been used to make the article appear of greater value than it really is, and consequently that the word ‘adulterated’ should be applied. Nevertheless, not being willing to take the responsibility of making such inferences, I have inserted the remark, ‘adulteration doubtful.’ Twenty-three out of the forty-nine samples were found to be dyed and consequently thus ‘adulterated.’

Some of the samples referred to are not only dyed but contain preservatives. In nineteen other samples which contained no foreign colouring matter, small quantities of preservatives were also found. Granting that the latter as used are not injurious to health, it can of course be maintained that they are required for the production of the catsup ‘in a state fit for consumption.’ (See Adulteration Act 2 (g) (1). But even in that case the law requires that they should be ‘distinctly labelled as a mixture.’ Since this has not been done, except in one case, No. 26892, Montreal, I have stated the opinion in the tabulated statement that eighteen of the samples referred to are ‘adulterated,’ giving the reason. The remaining seven samples in which foreign colouring matter and preservatives were not found, together with No. 26892 above mentioned, I have characterised as unadulterated. The classification therefore stands as follows :—

Unadulterated	8
Not marked ‘mixture’.	18
Adulteration doubtful.... .	23
	<hr/>
Total	49

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From the tabulated statement it will be seen that these samples vary very considerably in the amount of solids they contain, which must certainly affect their value as condiments. This percentage varies from 7·44 to 29·04, and indicates great differences in the quantities of materials used to make a certain amount of product. There are also variations as regards the quality of the solids, which are shewn in the following table as the results of examining eighteen of the samples, taken almost at random, and subjected to treatment in crysotile fibre:—

Number of sample.	Total solids.	Water.	Solids soluble in alcohol.	Solids soluble in water after alcohol.	Insoluble residue.	Percentage of insoluble residue to total solids.	Nitrogen in alcohol extract.
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.
28322	22·80	77·20	16·32	5·68	0·80	3·51	undet.
24271	17·26	82·74	13·36	2·72	1·18	6·84	0·22
732	11·50	88·50	6·84	2·16	2·50	21·74	0·20
479	8·10	91·90	4·60	1·72	1·78	21·97	0·19
26892	17·90	82·10	12·50	4·70	0·70	3·91	0·93
29363	26·44	73·56	17·12	8·68	0·64	2·42	0·74
29371	25·76	74·24	21·00	3·16	1·60	6·21	0·12
29372	16·52	83·48	11·36	3·50	1·66	10·05	0·14
32305	13·20	86·80	9·26	2·50	1·44	11·06	0·93
29495	20·26	79·74	15·60	4·00	0·66	3·25	undet.
30160	23·34	76·66	17·44	4·60	1·30	5·57	0·20
25921	10·08	89·92	6·56	1·74	1·78	17·66	0·89
25922	15·74	84·26	10·86	3·78	1·10	6·99	0·94
25923	9·92	90·08	3·88	3·00	3·04	30·64	0·94
25924	20·70	79·30	16·40	3·08	1·22	5·89	0·85
28696	15·80	84·20	10·70	4·54	1·02	6·45	0·56
28697	21·40	78·60	15·00	5·76	0·60	3·08	0·64
28176	17·30	82·70	10·56	6·20	0·54	3·12	undet.

The remarkable feature brought out by these tests is the large amounts of substances in the total solids which are soluble in alcohol and water. In the preparation of tomato ketchup a large amount of the vegetable fibre which the original raw material contains seems to be rendered soluble. In twelve out of eighteen samples examined the amount of total solids in an insoluble condition does not exceed 7 per cent. In four out of the remaining six samples the insoluble varies from 17·66 to 30·64 per cent. Whether these differences have any particular meaning is a question which may well be reserved for future investigation.

Meanwhile the results of certain experiments for making ‘catsup’ from other vegetables may here be put on record. In treating these the following process was adopted, which is taken from Mrs. Lincoln’s Boston Cook Book :—‘Boil one bushel of ripe tomatoes, skins and all, and when soft strain through a colander to remove the skins only. Mix one cup of salt, two pounds of brown sugar, half an ounce of cayenne pepper, three ounces each of ground allspice, mace and celery seed, two ounces of ground cinnamon and stir into the tomato. Add two quarts of best cider vinegar, and when thoroughly mixed strain through a sieve. Pour all that runs through into a large kettle and boil slowly till reduced one half. ‘Put into small bottles and keep in a cool dark place.’ Catsups from apple, turnip and pumpkin pulp were made by following this recipe, and the products gave the following results when tested in the same manner as the above mentioned eighteen samples :—

—	Total solids.	Water.	Substances soluble in alcohol.	Soluble in water after alcohol.	Insoluble residue.	Percentage of insoluble residue in total solids.	Nitrogen in alcohol extract.
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Apple	12·40	87·60	9·66	1·92	0·82	6·61	0·87
Turnip	17·42	82·58	12·80	2·30	2·32	13·31	1·02
Pumpkin	12·80	87·20	9·30	1·78	1·72	13·42	0·93

In conclusion I have to report that all the results herein described have been obtained under my directions by Mr. A. Lemoine, assistant analyst. Recommending the publication of this report, I have the honour to be, sir, your obedient servant,

7-8 EDWARD VII., A. 1908

RESULTS OF EXAMINING 49

DISTRICT OF NOVA SCOTIA—

Date of Collection	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.					\$ c.	
Aug. 28..	Tomato catsup..	27479	W. E. Crowe & Co., Halifax	3 bots..	30	Aylmer Canning Co., Aylmer, Ont.
" 30..	Homemade " ..	27483	Lovitt & Lovitt, Yarmouth, N.S.	3 " ..	0 75	T. A. Snider Preserve Co., Cincinnati, Ohio, U.S.A.
" 31..	Tomato catsup..	27485	Wm. Law & Co., Yarmouth	3 " ..	0 38	VanCamp Packing Co., Indianapolis, U.S.

DISTRICT OF PRINCE EDWARD

Aug. 23..	Tomato catsup..	28322	Jenkins & Son, Charlottetown.	3 bots..	0 45	Grantham Preserve Works, St. Kitts.
" 23..	" " ..	28323	Stewart & Son, Charlottetown.	3 " ..	0 60	Pure Gold Manufacturing Co., Toronto.

DISTRICT OF NEW BRUNSWICK—

Aug. 23..	Tomato ketchup.	24270	Dearborn & Co., 95 Prince William St., St. John, N.B.	3 bots..	0 75	Aylmer Canning Co., Aylmer, Ont.
" 23..	" " ..	24271	Vanwart Bros., cor. Duke and Charlotte Sts., St. John, N.B.	3 " ..	1 05	Curtice Bros. Co., Rochester, N.Y., U.S.A.
" 23..	" " ..	24272	William Baxter, cor. Leinster and Carmarthen Sts., St. John, N.B.	3 " ..	0 75	Flynn Bros., Garden City Canning Co., St. Catharines, Ont.

DISTRICT OF QUEBEC—

Sept. 10..	Tomato catsup..	726	Syndicat de Fraserville, Fraserville, Que.	3 bots ..	0 60	Not known.....
" 11..	" " ..	728	The Dixon Café, Rimouski, Que.	3 " ..	0 45	Hudon, Hebert et Cie, Montreal.
" 14..	" " ..	731	L. P. Demers, Quebec.....	3 " ..	0 30	J. B. Renaud et Cie, Que.
" 14..	" " ..	732	Leandre Faucher, Quebec..	3 " ..	0 45	Quebec Preserving Co., Q.

SESSIONAL PAPER No. 14
SAMPLES OF TOMATO CATSUP.
R. J. WAUGH, INSPECTOR.

Inspector's Report.	RESULTS OF ANALYSIS.							Remarks by the Chief Analyst.
	Total Solids.	Total Ash.	Acidity stated as Acetic Acid.	Coal Tar Dyes.	Preservatives.			
					Salicylic Acid.	Benzoic Acid.	Sulphurous Acid.	
	p. c.	p. c.	p. c.					
Sold as Canada First brand	25.90	3.28	1.20	Doubtful.	None ..	Present.	Present.	Not marked as a 'mixture,' and therefore adulterated.
The vendors are wholesale dealers.	22.40	3.70	1.08	None ..	" ..	" ..	None ..	" ..
" ..	25.30	2.50	1.44	Present.	" ..	" ..	" ..	Adulteration doubtful.

ISLAND—T. MOORE, INSPECTOR.

'Puritan' brand	27.42	6.96	1.20	Doubtful.	None ..	None ..	Trace.	Unadulterated.
.....	13.72	2.16	0.72	None ..	" ..	Present.	None ..	Not marked as a 'mixture,' and therefore adulterated.

J. C. FERGUSON, INSPECTOR.

Labelled 'Long Island Ketchup.' Bottled by Dearborn & Co., St. John, N.B	23.34	3.90	1.44	None ..	None ..	Present.	Present.	Not labelled 'mixture,' and therefore adulterated.
Labelled Curtice Bros. Blue Label; guaranteed free from artificial colour; contains $\frac{1}{10}$ of 1 p.c. benzoate soda.	17.72	3.62	0.90	" ..	" ..	" ..	" ..	" ..
Labelled Flinn Bros. Tomato Ketchup, Garden City Canning Co., St. Catharines, Ont.	18.56	3.62	0.90	" ..	" ..	" ..	None ..	" ..

C. E. ROY, INSPECTOR.

Labelled 'Puritan Brand'; Grantham Preserve Works, St. Kitts.	15.28	7.66	1.20	Doubtful...	None ..	Present.	Present.	Not labelled 'mixture,' and therefore adulterated.
" ..	23.60	3.26	1.20	None ..	" ..	" ..	" ..	" ..
Labelled 'Canada First'; Aylmer Canning Co.	21.68	3.34	0.90	" ..	" ..	" ..	" ..	" ..
Labelled 'Favorite Hot Stuff.'	11.30	3.26	1.20	Present.	" ..	" ..	None ..	Adulteration doubtful.

SESSIONAL PAPER No. 14

SAMPLES OF TOMATO CATSUP—*Continued.*

J. C. ROULEAU, INSPECTOR.

Inspector's Report.	RESULTS OF ANALYSIS.							Remarks by the Chief Analyst.
	Total Solids.	Total Ash.	Acidity stated as Acetic Acid.	Coal Tar Dyes.	Preservatives.			
					Salicylic Acid.	Benzoic Acid.	Sulphurous Acid.	
	p. c.	p. c.	p. c.					
Labelled 'Sterling Brand.'	18·04	2·42	1·20	Present.	None ..	Present.	Present.	Adulteration doubtful.
Prepared from fresh ripe tomatoes; delightfully blended with spices.	26·16	2·98	1·20	Doubtful.	" ..	Doubtful.	None ..	Unadulterated.
Label does not mention name of maker.	9·12	2·62	1·32	Present.	" ..	None ..	" ..	Adulteration doubtful.
Put up in bottles that had been used for cocoa mariani of Paris. Manufacturer's name not marked on label.	8·62	2·58	0·96	" ..	" ..	" ..	" ..	" ..

J. J. COSTIGAN, INSPECTOR.

Taken from stock at factory	7.44	3.40	0.90	Present.	Present.	None ..	None ..	Adulteration doubtful.
Taken from stock at factory; labelled 'Celebrated Club Brand.'	10.90	2.70	1.32	" ..	None ..	" ..	" ..	" ..
Bears a certificate by Prof. J. E. Morrison that samples have been found 'pure, free from all injurious colouring matter and antiseptic.'	11.34	3.10	1.02	" ..	" ..	Present.	" ..	" ..
'Canada First' brand.....	21.80	3.14	1.20	None ..	" ..	" ..	" ..	Not marked as a 'mixture,' and therefore adulterated.
1905 stock; labelled 'New Process.'	16.88	1.84	0.60	Present.	" ..	" ..	" ..	Adulteration doubtful.
No colouring; wholesale price, 90c. per doz.; marked 'Compound.'	17.80	2.30	0.72	None ..	Present.	None ..	" ..	Unadulterated; admixture being declared.

A. E. SANDERSON, INSPECTOR.

Labelled 'Canada First' brand; prepared from fresh ripe tomatoes; last year's make.	26.44 Pt. 23.76	2.92 2.30	0.84	None ..	None ..	Present.	None ..	Not labelled 'mixture,' and therefore adulterated.
Labelled 'Pure Gold Sweet Catsup.'	8.56	2.58	0.60	Present.	" ..	" ..	" ..	Adulteration doubtful.
Labelled 'Pure Gold Hot Stuff.'	17.46	2.10	0.96	None ..	" ..	" ..	" ..	Not marked 'mixture,' and therefore adulterated.
Labelled 'Canada Brand.'	20.90	2.82	0.90	Present.	" ..	None ..	Present.	Adulteration doubtful.
Labelled 'Graham's Lilly Brand Tomato Catsup.' Genuine homemade; absolutely pure. Trade mark registered.	13.02	3.12	0.66	" ..	" ..	Doubtful.	None ..	" ..

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RESULTS OF EXAMINING 49
DISTRICT OF KINGSTON—

Date of Collection	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.					\$ c.	
Aug. 21..	Catsup	29483	C. S. Litton, Alfred St., Kingston, Ont.	3 bots..	0 45	H. J. Heinz, Pittsburg, Pa.
" 21..	Tomato catsup..	29490	F. Ostler, Johnston St., Kingston, Ont.	3 " ..	0 30	The T. A. Lyttle Co., Toronto, Ont.
" 21..	" " ..	29491	H. A. Smith, Brock, St., Kingston, Ont.	3 " ..	0 30	Aylmer Canning Co., Aylmer, Ont.
" 21..	" ketchup.	29495	F. A. Allan, Alfred St., Kingston, Ont.	3 " ..	0 45	Standard Canning Co., Hamilton, Ont.

DISTRICT OF TORONTO—

Sept. 4...	Tomato catsup.	30171	J. Butcher, cor. Queen and John Sts., Toronto.	3 bots..	0 45	Oshawa Canning Co., Oshawa, Ont.
" 4...	" " ..	30173	W. R. Black, 360 Queen St., Toronto.	3 cans..	0 30	Bought from Eby, Blain & Co., Toronto.
" 4...	" " ..	30175	Wm. Davies & Co., 418 King St. East, Toronto.	5 bots..	0 30	Vendors
" 5...	" " ..	30179	T. Eaton & Co., Yonge St., Toronto.	3 tins..	0 15	Essex Canning and Preserving Co., Ltd.
" 5...	" " ..	30181	R. Simpson & Co., Yonge St., Toronto.	3 bots..	0 30	Aylmer Canning Co., Aylmer, Ont.

DISTRICT OF LONDON—

Aug. 24..	Tomato catsup..	30152	George A. Nairen, Windsor, Ont.	3 bots..	0 30	Somerville & Co., Hamilton, Ont.
" 25..	" " ..	30160	John McCoville & Son, Chatham, Ont.	3 " ..	0 30	Aylmer Canning Co., Aylmer, Ont.
" 25..	" ketchup.	30164	Edward O'Flaherty, Stratford, Ont.	3 " ..	0 30	A. F. McLaurin Co., Toronto, Ont., agents for Canada.
" 27..	" catsup..	30167	J. W. Irwin, Clinton, Ont.	3 " ..	0 30	John Slone. wholesale grocer, Toronto, Ont.

DISTRICT OF MANITOBA—

Nov. 23 .	Tomato catsup..	25921	White Star Manufacturing Co., Winnipeg.	1 quart.	0 15	Vendors
" 23..	" " ..	25922	Blackwoods, Ltd., Winnipeg.	1 " ..	0 25	"
" 23..	" " ..	25923	The Dyson Co., Winnipeg.	1 " ..	0 15	"
" 23..	" " ..	25924	Jobin, Marrin Co., Winnipeg.	2 lbs....	0 10	Delhi Fruit and Vegetable Canning Co., Delhi, Ont.

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SAMPLES OF TOMATO CATSUP—Continued.

J. HOGAN, INSPECTOR.

Inspector's Report.	RESULTS OF ANALYSIS.							Remarks by the Chief Analyst.
	Total Solids.	Total Ash.	Acidity stated as Acetic Acid.	Coal Tar Dyes.	Preservatives.			
					Salicylic Acid.	Benzoic Acid.	Sulphurous Acid.	
	p.c.	p.c.	p.c.					
.....	19.40	2.80	1.20	None ..	None ..	Present.	None ..	Not marked 'mix- ture,' and therefore adulterated.
Labelled 'Canada Brand.'	16.80	2.80	1.32	Present.	" ..	Doubt- ful.	Present.	Adulteration doubt- ful.
Labelled 'Canada First.'..	23.84	3.30	0.90	None ..	" ..	" ..	Trace...	Unadulterated.
Labelled 'Old Church.'...	24.56	7.80	0.90	" ..	" ..	Present.	None ..	Not marked as a 'mix- ture,' and therefore adulterated.

T. KIDD, ACTING INSPECTOR.

'Royal Navy' brand....	29.04	3.80	0.72	Present.	None ..	None ..	None ..	Adulteration doubt- ful.
Labelled 'Lorne brand, West Lorne Canning and Evaporating Co.'	13.34	3.56	0.78	" ..	" ..	" ..	" ..	" ..
Labelled 'Davies, Toronto' Essex Brand Canning and Preserving Co.	17.80	2.34	1.32	" ..	" ..	" ..	" ..	" ..
	17.80	2.44	0.42	None ..	" ..	Present.	" ..	Not labelled 'mix- ture,' and there- fore adulterated.
Marked 'Canada First'...	22.84	2.74	0.78	" ..	" ..	" ..	" ..	" ..

T. KIDD, INSPECTOR.

Branded 'Champion'....	14.82	4.02	0.99	Present.	None ..	Present.	None ..	Adulteration doubt- ful.
Called 'Canada First'....	23.92	2.00	0.96	None ..	" ..	" ..	Present.	Not labelled 'mix- ture,' and there- fore adulterated.
Labelled 'Wade's Home- made; The Tip-top Ketchup Co., Cincinnati, Ohio, U.S.A.'	12.50	2.70	0.96	" ..	" ..	None ..	None ..	Unadulterated.
'Defiance' brand.....	26.70	2.20	0.78	" ..	" ..	" ..	" ..	" ..

W. M. CONKLIN, INSPECTOR.

.....	10.16	1.60	0.90	Present.	None ..	Doubt- ful.	None ..	Adulteration doubt- ful.
.....	15.84	2.30	1.20	None ..	" ..	Present.	" ..	Not labelled 'mix- ture,' and there- fore adulterated.
.....	9.74	2.14	1.20	Present.	Present.	None ..	" ..	Adulteration doubt- ful.
.....	20.62	1.86	1.08	None ..	None ..	" ..	" ..	Unadulterated.

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RESULTS OF EXAMINING 49
DISTRICT OF CALGARY—

Date of Collection	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.					\$ c.	
Sept. 12..	Tomato catsup..	28696	L. T. Newburn, whole- sale, Calgary.	3 bots..	0 45	T. A. Lyttle Co., Ltd., Toronto, Ont.
" 12..	" " ..	28697	G. F. & J. Galt, whole- sale, Calgary.	3 " ..	0 45	Taylor & Pringle, Owen Sound, Ont.

DISTRICT OF BRITISH COLUMBIA—

Aug. 29..	Tomato catsup..	28176	W. H. Malkin Co., Ltd., wholesale grocers, Van- couver, B.C.	3 bots..	0 65	Libby, McNeill & Libby, Chicago, U.S.A.
29..	" ketchup.	28181	H. Albert, Carrol St., re- tail, Vancouver, B.C.	3 " ..	0 75	Brady, Houston Packing Co., Victoria, B.C.
0..	" " ..	28183	The London Grocery, Gran- ville St., retail, Vancou- ver, B.C.	3 " ..	0 45	Standard Canning Co., Hamilton, Ont.

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SAMPLES OF TOMATO CATSUP—*Concluded.*

W. FLETCHER, INSPECTOR.

Inspector's Report.	RESULTS OF ANALYSIS.							Remark by the Chief Analyst.
	Total Solids.	Total Ash.	Acidity stated as Acetic Acid.	Coal Tar Dyes.	Preservatives.			
					Salicylic Acid.	Benzoic Acid.	Sulphurous Acid.	
	p.c.	p.c.	p.c.					
Labelled 'Sterling Brand'.	Pt. 14·86	2·70 1·56	1·20	Present.	None ..	None ..	Present.	Adulteration doubtful.
.....	Pt. 19·80	3·00 1·64	0·96	" ..	Present.	" ..	None ..	" "

E. B. PARKINSON, INSPECTOR.

Labelled 'Libby's'.. . . .	18·17 Pt. 16·54	2·50	1·20	None ..	None ..	None ..	None ..	Unadulterated.
'Bar Harbour' brand, finest quality catsup in the market.	25·50	3·60	0·90	Present.	" ..	Present.	" ..	Adulteration doubtful.
Labelled 'Old Church' ...	12·44	2·44	0·60	" ..	" ..	" ..	" ..	" "

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APPENDIX F.**BULLETIN No. 130—TEA, 1906.**

OTTAWA, January 8, 1907.

W. J. GERALD, Esq.,

Deputy Minister of Inland Revenue.

SIR,—In the month of July last representations were made to you regarding the artificial colouring of teas, and stating that large quantities of artificially coloured green, Japan and Ceylon teas were imported into the Canadian market by every steamer. The complaints came from Toronto, and although it was believed that such colouring or 'facing' was not a common practice, it was nevertheless thought advisable to cause a collection of tea samples to be made. This took place in August and September, 1906, when samples were collected and subjected to examination in this laboratory, the results of which, as ascertained by Mr. A. Valin, are given in the tabulated statement accompanying this report.

In considering these results it is necessary to remember that there exists an Order in Council, dated September 11, 1894, establishing the following regulation under the 19th section of the Adulteration Act as to when the tea shall be considered as adulterated :—

Tea shall be considered as adulterated which contains leaves other than those of the tea-plant ; or previously infused leaves or leaves of inferior quality to such an extent as to reduce the amount of extract or substances soluble in hot water to less than thirty per cent, or cause the proportion of ash soluble in hot water to be less than two and three quarters per cent ; or any admixture of chemicals or other deleterious substances, or such an amount of mineral matter as will cause the amount of ash to exceed eight per cent reckoned on the sample dried at 100° C.

It has not been found necessary to introduce into the statement a column giving the amount of ash calculated on the dry substance. The highest percentage of ash found in any sample is 7.20 (No. 713) which corresponds to 7.87 on the dry substance. This result disposes of the assertion that many of the teas sold in our markets are artificially coloured or 'faced' because the materials used for the purpose tend to increase the quantity of ash. Neither was any evidence of facing obtained in treating the samples with warm water. Seven of the samples (Nos. 31505, 31508, 29366, 30182, 30161, 28177 and 28180) show smaller percentages of soluble ash in the dried sample than 2.75, but since the amount of hot water extract is not below the minimum they cannot be challenged as containing exhausted tea leaves, although they may be classed as doubtful.

On the whole it has to be stated that there is no evidence of adulteration to be found in the samples collected, although there are no doubt great variations as regards quality. This favourable showing is to be expected in view of the fact that the following clause under 'Prohibited Goods' still forms part of the Customs Tariff :—'1205. 'Tea adulterated with spurious leaf or with exhausted leaves, or containing so great an 'admixture of chemicals or other deleterious substances as to make it unfit for use.' Nevertheless it is necessary that great care should be exercised in the inspection of teas

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as they arrive at the ports of entry, because, according to the report of the Principal Chemist of Great Britain for the year ended March 31, 1906 (page 7), ‘of the 2,917 samples (of tea) examined, 259 were reported against, chiefly on account of the presence of foreign substances.’ It is not impossible that some of these rejected lots might find their way to Canada.

It has not been found necessary in the tabulated statement to employ a column for remarks. The following is a classification of the samples which also gives the districts where they were obtained.

Name of Inspection District.	Genuine.	Doubtful.	Total of Samples.
Nova Scotia	5	0	5
Prince Edward Island.....	2	0	2
New Brunswick	5	0	5
Quebec.....	8	0	8
St. Hyacinthe	8	0	8
Montreal.....	8	2	10
Ottawa	1	1	8
Kingston	8	0	8
Toronto	9	1	10
London ..	1	1	8
Manitoba	5	0	8
Calgary	4	0	4
British Columbia ..	3	2	5
	82	7	89

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE,
Chief Analyst.

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DESCRIPTION OF, AND RESULTS OF

DISTRICT OF NOVA SCOTIA—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906.					cts.	
Aug. 28..	Black Tea.....	27475	J. F. Crowe & Co., Halifax.	$\frac{3}{4}$ lb.	25	Vim Tea Co., St. John, N.B.
" 28..	" ".....	27478	H. Wentzell & Co. "	$\frac{3}{4}$ "	25	Blended by vendor.
" 29..	" ".....	27480	Jas. McGregor "	1 "	40	Bauld Bros. & Co., Halifax.
" 30..	Green Tea.....	27484	Lovitt & Lovitt, Yarmouth, N.S.	1 "	50	W. F. Hatheway, St. John, N.B.
" 31..	Black Tea.....	27488	Cain Bros., Yarmouth, N.S.	$\frac{3}{4}$ "	25	T. Wood & Co., Montreal.

DISTRICT OF PRINCE EDWARD ISLAND—

Aug. 23..	Tea, Black.....	28320	Sanderson & Co., Charlottetown.	1 lb.	25	Estabrook, St. John, N.B.
" 23..	" ".....	28321	Beer & Goff, Charlottetown.	1 "	25	H. Haszard, Charlottetown P.E.I.

DISTRICT OF NEW BRUNSWICK—

Aug. 21..	Tea, Black.....	24265	The Vim Tea Co., Ltd., Ward St., St. John, N.B.	$1\frac{1}{2}$ lb.	53	The Vim Tea Co., Ltd., importers, packers and blenders, St. John, N.B.
" 21..	" ".....	24266	J. J. McGaffigan Co., Ltd., 55 Dock St., St. John, N.B.	$1\frac{1}{2}$ "	53	J. J. McGaffigan Co., Ltd., blenders and packers, 55 Dock St., St. John, N.B.
" 21..	" ".....	24267	Harry W. DeForrest, 16 Mill St., St. John, N.B.	$1\frac{1}{2}$ "	53	Harry W. DeForrest, 16 Mill St., blender and packer, St. John, N.B.
" 22..	" ".....	24268	Maple Leaf Tea Co., 11 Germain St., St. John, N.B.	$1\frac{1}{2}$ "	53	Joseph Travers & Sons, London, England.
" 22..	" ".....	24269	T. H. Estabrooks, cor. Mill and North Sts., St. John, N.B.	$1\frac{1}{2}$ "	60	T. H. Estabrooks, blender and packer, cor. Mill and North Sts., St. John, N.B.

DISTRICT OF QUEBEC—

Aug. 29..	Tea, Green.....	712	Alfred Belodeau, Roberval, Que.	1 lb.	40	Leclerc & Letellier, Que.
" 29..	" ".....	713	Alf. Lalancet, Roberval, Que.	1 "	40	Stroud, Montreal..

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EXAMINING 89 SAMPLES OF TEA.
R. J. WAUGH, INSPECTOR.

Inspector's Report.	RESULTS OF ANALYSIS.						Botanical Examination.
	ASH					Hot Water Extract.	
	Total.	Water Soluble.	Acid Soluble.	Acid Insoluble.	Moisture.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
Sold as Vim tea. Ven- dor is a wholesale dealer.	6.02	3.56	2.22	0.24	8.20	38.45	Tea leaves : large, broken and stems.
Sold as 'Three Star' brand.	5.62	3.46	2.02	0.14	7.10	36.90	Tea leaves : large, broken and stems.
Sold as Queen brand...	5.48	3.50	1.80	0.18	7.25	33.05	Tea leaves : large, broken and stems.
Vendors are wholesale dealers. Taken from bulk.	5.36	3.02	1.94	0.40	7.35	34.65	Tea leaves, large.
Sold as Coronation brand. Taken from bulk.	5.68	3.02	2.48	0.18	8.25	31.15	Tea leaves very large broken.

T. MOORE, INSPECTOR.

Red Cross blend.....	5.54	3.40	2.02	0.12	7.00	32.95	Tea leaves broken with many stems.
Haszards blend.	5.48	3.24	2.08	0.16	7.10	30.50	Tea leaves medium size and broken.

J. C. FERGUSON, INSPECTOR.

Labelled ½ lb. 'Vim tea. Indo-Ceylon tea.'	5.68	3.62	1.86	0.20	6.80	36.50	Tea leaves much broken.
Labelled 'Lea Rose blend. India and Ceylon.'	5.40	3.50	1.78	0.12	7.70	30.60	Tea leaves large ; broken.
Labelled 'Union blend tea.'	5.54	3.54	1.88	0.12	7.10	32.85	Tealeaves small ; broken and with many stems.
Labelled 'Maple Leaf ; pure Indo-Ceylon.'	5.64	3.60	1.94	0.10	7.35	30.90	Tea leaves small ; broken and stems.
Labelled 'Red Rose tea ; pure Indo-Cey- lon.'	5.32	3.48	1.66	0.18	7.10	36.40	Tea leaves large and broken, and stems.

C. E. ROY, INSPECTOR.

.....	6.06	3.06	1.94	1.06	7.00	32.80	Tea leaves large.
.....	7.20	3.14	2.76	1.30	8.55	31.80	" and broken.

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DESCRIPTION OF AND RESULTS OF
DISTRICT OF QUEBEC--

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906					cts.	
Aug. 30..	Tea, Green.....	716	J. T. Laferriere et Cie, Incpd., Que.	1 lb.	50	Coté, Boivin et Cie, Chicoutimi.
" 30..	" Salada Ceylon....	718	Haddad & Sawaga, Chicoutimi, Que.	1 "	20	P. C. Larkin & Co., Montreal.
" 31..	" Conqueror.....	720	O d i n a Simard, Bagotville, Que.	1 "	40	W. D. Stroud & Sons, Montreal.
" 31..	" Ceylon.....	722	P. Chayer, Bagotville, Que.	1 "	40	N. Turcotte et Cie, Que.
Sept. 11..	" Japan	729	Arthur Ouellet, Rimouski, Que.	1 "	40	Turcotte et frère, Que.
" 12..	" Salada.....	730	Elz. Belanger, Pointeau Père, Que.	1 "	50	P. C. Larkin & Co., Montreal.

DISTRICT OF ST. HYACINTHE--

Aug. 20..	Green Tea, 'Blue Ribbon.'	460	A. C. Trempe, Sorel.....	1 lb.	30	The Blue Ribbon Tea Co., Toronto.
" 21..	Green Tea, 'Gunpowder.'	461	A. Plante, Berthierville	1 "	20	L. Chaput et fils et Cie, Montreal.
" 21..	Green Tea, Ceylon 'Salada.'	462	T. A. Mercier, L'Epiphanie.	1 "	30	Salada Tea Co., Montreal.
" 21..	Green Japanese Tea.	463	C. Barette, Joliette.....	1 "	35	E. D. Marceau, Montreal.
" 22..	Black Tea.....	464	E. Benoit, Shawenegan Falls.	1 "	40	Not known....
" 23..	"	465	W. E. Chamberland & Co., Grand Mère.	1 "	25	Alf. Tyler, London, Ont.
" 23..	"	466	Grenier et Paquin, Grand Mère.	3/4 "	23	Hudon, Hebert et Cie, Montreal.
" 24..	"	467	Poirier et Abran, Three Rivers.	1 "	25	L. Chaput, fils et Cie, Montreal.

DISTRICT OF MONTREAL--

Aug. 22..	Black Tea	31501	D. Stroud, 622 Notre Dame West, Montreal.	1 lb.	25	Vendor ...
" 22..	"	31502	" " ..	1 "	40	"
" 22..	"	31503	S. T. Spindle, 502, Notre Dame West, Montreal.	1 "	40	"
" 23..	Japan Tea.....	31504	Plourde et Sirois, 110 St. Lawrence, Montreal.	1 "	30	T. H. Estabrooks, Montreal.
" 24..	Green Tea.....	31505	N. Beaudoin, 687 Mount Royal Ave.	1 "	25	Mathewson & Son, Montreal.

SESSIONAL PAPER No. 14
EXAMINING 89 SAMPLES OF TEA—Continued.
C. E. ROY, INSPECTOR—Concluded.

Inspector's Report.	RESULTS OF ANALYSIS.						Botanical Examination.
	Ash.				Moisture.	Hot Water Extract.	
	Total.	Water Soluble.	Acid Soluble.	Acid Insoluble.			
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	
.....	6.28	2.92	2.70	0.66	5.95	30.60	Tea leaves large.
.....	4.88	3.12	1.68	0.08	7.10	34.70	Tea leaves small and broken.
.....	5.26	3.46	1.70	0.10	7.50	36.90	Tea leaves broken and some stems.
.....	5.08	3.14	1.84	0.10	6.85	35.40	Tea leaves broken.
.....	5.76	3.24	1.98	0.54	5.85	36.15	"
.....	4.64	2.90	1.64	0.10	7.50	36.40	Tea leaves small and broken.

J. C. ROULEAU, INSPECTOR.

Included in depart- ment's samples.	4.74	2.72	2.02	0.20	7.85	35.85	Tea leaves large and broken.
Out of a 30 lb. case....	4.90	2.64	2.14	0.12	7.65	30.85	Tea leaves.
Guaranteed as pure, uncolored by the Salada Tea Co.	4.72	2.96	1.68	0.08	8.10	38.40	Tea leaves large and broken.
Out of 80 lb. case.....	5.74	2.72	2.52	0.50	7.65	33.20	" "
.....	4.84	2.98	1.80	0.06	8.65	33.40	Tea leaves and stems; the for- mer large and broken.
Box marked /P\ O. T. & C., London, Pipla- gool 2949.	4.92	3.20	1.72	0.00	8.85	29.15	Tea leaves very large but broken.
Out of a 45 lb. case, marked Horton Cey- lon Pekoe, H H Mon- treal.	4.96	3.28	1.62	0.06	8.85	31.25	Tea leaves broken.
Box marked choice, first crop, Packling Concon ^{S. H} / _{E. C} Kut Chong.	4.86	3.08	1.60	0.12	8.75	29.30	Tea leaves medium size and broken.

J. J. COSTIGAN, INSPECTOR.

Imported direct by ven- dor; blended.	4.74	3.02	1.66	0.06	9.20	36.50	Tea leaves and stems; the former broken.
" " ..	4.52	2.96	1.43	0.08	9.60	32.10	Tea leaves broken and many stems.
" " ..	4.52	2.84	1.54	0.14	8.15	33.65	Tea leaves large and broken.
Blended	5.46	3.74	1.44	3.28	7.45	35.25	Tea leaves broken.
.....	5.89	2.32	2.96	0.52	7.40	36.30	"

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DESCRIPTION OF AND RESULTS OF
DISTRICT OF MONTREAL—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906.					Cts.	
Aug. 24..	Japan Tea.....	31506	N. Beaudoin, 687 Mount Royal Ave.	1 lb.	20	Kearney Brothers, Montreal.
" 24..	Black Tea.....	31507	J. V. Boudrias, 223 Notre Dame St. East, Montreal.	1 "	25	John Duncan & Co., Montreal.
" 24..	Green Tea.....	31508	" " ..	1 "	20	Not known.
" 28..	Japan Tea.....	31509	H. F. Barre, 4818 St. Catherine, Maisonneuve.	1 "	25	" " ..
" 31..	"	31510	English Provision Co., 681 St. Catherine West, Montraal.	1 "	40	" "

DISTRICT OF OTTAWA—

Sept. 10..	Green Tea	29361	Alex. Larose, 128 Queen St. West, Ottawa.	1 lb.	30	Bate & Sons, Ottawa.
" 10..	Black Tea.....	29362	" " ..	1 "	30	" " ..
" 10..	Green Tea, Ceylon....	29365	A. Boivin, 86 Queen St. West, Ottawa.	1 "	40	Anglo - Saxon Tea Co., Ceylon and India.
" 10..	Black Salada Tea...	29366	" " ..	1 "	50	" " ..
" 10..	Black Tea, No. 2.....	29367	Capitol Blend Tea Co., 326 Queen St., Ottawa.	1 "	25	Vendors
" 10..	" No. 02.....	29368	" " ..	1 "	30	"
" 10..	Japan Tea No. 2, Green.	29369	" " ..	1 "	25	"
" 10..	Japan Tea No. 02, Green.	29370	" " ..	1 "	30	"

DISTRICT OF KINGSTON—

Aug. 21..	Black Tea	29481	C. S. Litton, Alfred St., Kingston.	1 lb.	30	Estabrook
" 21..	Japan Tea.....	29482	" " ..	1 "	30	W. G. Craig Co., Kingston.
" 21..	Black Tea.....	29485	W. J. Nesbett, Johnston St., Kingston.	1 "	40	Robertson & Son, Kingston.
" 21..	Japan Tea	29486	" " ..	1 "	30	Redden, Kingston.
" 21..	Black Tea.....	29488	F. Ostler, Johnston St., Kingston.	1 "	30	W.G.Craig, Kingston.
" 21..	Salada Tea.	29489	" " ..	1 "	30	" " ..
" 21..	Japan Tea	29493	F. A. Allan, Alfred St., Kingston.	1 "	30	Will. Gilbreth, Montreal.
" 21..	Black Tea	29494	" " ..	1 "	30	Robertson Nicolle, Kingston.

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EXAMINING 89 SAMPLES OF TEA—Continued.

J. J. COSTIGAN, INSPECTOR--Concluded.

Inspector's Report.	RESULTS OF ANALYSIS.						Botanical Examination.
	Ash.					Hot Water Extract.	
	Total.	Water Soluble.	Acid Soluble.	Acid Insoluble.	Moisture.		
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
.....	4.48	3.24	1.20	0.04	7.70	37.30	Tea leaves broken with a few stems.
.....	5.26	3.16	1.68	0.42	7.95	33.40	Tea leaves broken with many stems.
.....	5.88	2.52	2.60	0.76	7.25	30.05	Tea leaves large and broken with a few stems.
.....	5.26	3.14	1.76	0.36	7.30	31.90	Tea leaves small and broken.
Uncoloured.....	5.20	3.28	1.78	0.14	7.00	35.00	Tea leaves small.

A. E. SANDERSON, INSPECTOR.

Labelled 'Tricotta Ceylon; Young-Hyson: bulked.'	5.60	3.00	2.20	0.40	7.70	38.25	Tea leaves broken and many stems.
Labelled 'Blend'.	4.54	3.18	1.36	0.00	8.50	34.15	Tea leaves small and broken.
Labelled 'uncoloured Ceylon green.'	5.04	3.14	1.90	0.00	7.00	36.70	Tea leaves broken and many stems.
Labelled 'Salada Ceylon Tea.'	4.68	2.14	2.46	0.08	7.70	31.80	Tea leaves small and broken.
Labelled 'Capitol Blend Tea Co.; purity, flavour and excellence guaranteed.'	5.12	3.26	1.86	0.00	7.45	34.15	Tea leaves and stems; the former large and broken.
" " "	4.68	3.02	1.64	0.02	7.15	35.45	Tea leaves broken.
Labelled 'Capitol blend.'	5.20	3.00	2.00	0.20	7.75	36.90	Tea leaves medium size and broken.
" " "	5.46	3.28	2.18	0.00	7.75	39.40	Tea leaves and stems; the former broken.

J. HOGAN, INSPECTOR.

.....	4.96	3.28	1.68	0.00	8.45	32.80	Tea leaves broken and stems.
.....	5.30	3.46	1.84	0.00	7.50	39.40	" "
.....	4.80	3.24	1.56	0.00	8.40	33.05	Tea leaves broken and many stems.
.....	5.60	3.06	2.12	0.42	7.25	36.55	Tea leaves broken.
.....	5.06	3.68	1.32	0.06	7.80	34.40	Tea leaves large; broken.
.....	4.98	2.62	2.16	0.20	7.45	33.75	Tea leaves broken.
.....	5.60	3.62	1.82	0.16	7.45	35.75	Tea leaves large; broken.
.....	4.04	2.88	1.16	0.00	8.65	31.85	Tea leaves broken; many stems.

7-8 EDWARD VII., A. 1908

DESCRIPTION OF AND RESULTS OF
DISTRICT OF TORONTO—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906.					cts.	
Sept. 4..	Ceylon Black Tea.....	30170	M. E. Goddard, 448 King St., Toronto.	$\frac{1}{2}$ lb.	13	R. B. Hayhoe & Co. wholesale, Toronto.
" 4..	Black Tea.....	30172	T. Creay, 318 Queen St., Toronto.	$\frac{1}{2}$ "	20	White & Co., wholesale, Toronto.
" 5..	Tea, Young-Hyson. ..	30177	A. F. Barker, 302 Yonge St., Toronto.	$\frac{1}{2}$ "	15	Not known.....
" 5..	India-Ceylon Tea.....	30180	T. Eaton & Co., Yonge St., Toronto.	1 "	23	Vendors blend the tea themselves.
" 5..	Ceylon Tea, Black....	30182	R. Simpson, Yonge St., Toronto.	1 "	25	" " ..
" 6..	Lipton's Black and Green Tea, Ceylon.	30183	Kelley Bros., 90 Queen St., Toronto.	$\frac{1}{2}$ "	20	R. Lipton, agent for Thos. Lipton.
" 6..	Blue Ribbon Tea.....	30185	J. W. Nettleton, cor. Church & Queen Sts., Toronto.	1 "	25	Blue Ribbon Tea Co., Toronto.
" 6..	India Tea	30187	H. McDougall, Toronto.....	1 "	25	Vendor.....
" 6..	Salada Tea	30190	Mrs. R. Davis, 120 York St., Toronto.	$\frac{1}{2}$ "	20	Salada Tea Co., Toronto.
" 6..	Red Rose Tea	30191	Mrs. Crapper, Georges St., Toronto.	$\frac{1}{2}$ "	20	T. H. Estabrook, St. John, N.B..

DISTRICT OF LONDON—

Aug. 23..	Gunpowder Tea. . .	30150	Orman & Mallion, Stratford.	$\frac{1}{2}$ lb.	18	Not known.....
" 23..	Black Tea... ..	30151	Will J. N. Nolfolk, Stratford	$\frac{1}{2}$ "	13	McPherson, Glasco & Co., wholesale, Hamilton.
" 24..	Young-Hyson Tea ...	30156	W. J. Cherney, Windsor, Ont.	$\frac{1}{2}$ "	25	Not known.....
" 24..	India-Ceylon Tea.....	30157	Fielding & Campead, Windsor, Ont.	1 "	50	T. H. Estabrook, St. John, N.B.
" 24..	Ceylon Tea	30158	Taylor & Williamson, Chatham, Ont.	$\frac{1}{2}$ "	30	S. T. Durand & Co., wholesale, Montreal.
" 24..	Salada Black Tea	30159	William Anderson, Chatham, Ont.	1 "	25	P. C. Larkin & Co., Toronto.
" 25..	India-Ceylon Tea, Black Tea.	30161	George S. Hayward, Chatham, Ont.	$\frac{1}{2}$ "	25	Vendor.....
" 28..	China Black Tea....	30168	Williams & Purcell, Seaforth, Ont.	$\frac{1}{2}$ "	25	McPherson, Glasco & Co., wholesale, Hamilton.

DISTRICT OF MANITOBA—

Sept. 12 .	Tea, Black.....	25791	K. McKenzie & Co., Winnipeg.	1 lb.	35	Mazawattee Tea Co., London, Eng
" 12..	"	25792	Campbell Bros. & Wilson, Winnipeg.	1 "	35	Packed by vendors

SESSIONAL PAPER No. 14
EXAMINING 89 SAMPLES OF TEA—Continued.
T. KIDD, ACTING INSPECTOR.

RESULTS OF ANALYSIS.							Botanical Examination.
Inspector's Report.	Ash.				Moisture.	Hot Water Extract.	
	Total.	Water Soluble.	Acid Soluble.	Acid Insoluble.			
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
.....	4.58	2.76	1.76	0.06	7.65	33.80	Tea leaves large ; broken.
.....	4.24	2.80	1.42	0.02	7.80	31.80	" small ; broken.
Green, Young-Hyson..	4.92	3.28	1.58	0.06	6.95	35.85	" very small ; broken.
.....	5.00	2.98	1.90	0.12	6.75	32.65	" large ; broken ; a few stems.
Heather brand.....	4.32	2.14	2.18	0.00	7.60	32.85	" large ; broken ; many stems.
Ceylon, green and black	4.96	2.64	2.24	0.88	7.60	32.70	" broken ; stems.
India-Ceylon tea ; blended black tea.	4.86	2.90	1.78	0.18	7.50	35.30	" large ; broken.
Vendor imports and blends himself ; call- ed 'Himalagan' tea.	5.24	3.24	2.00	0.00	7.15	34.30	" "
.....	4.66	2.84	1.82	0.00	7.05	37.20	" "
Branded pure India- Ceylon tea ; black.	4.30	2.66	1.56	0.08	6.75	35.75	" "

T. KIDD, INSPECTOR.

Gunpowder tea	6.36	3.32	2.64	0.40	7.10	33.90	Tea leaves large.
Blended by vendor in Stratford.	5.86	3.90	1.92	0.04	8.05	30.40	" broken.
.....	6.02	3.88	1.88	0.26	6.90	40.50	" small ; broken.
Called Red Rose tea...	4.40	2.96	1.44	0.00	7.45	36.00	" broken.
Called Mazawattee Ceylon tea.	4.04	2.64	1.32	0.08	8.25	34.50	" much broken ; a few stems.
Called Salada tea	4.80	3.04	1.76	0.00	7.60	35.50	" large ; broken.
Blended by vendor....	4.10	2.48	1.62	0.00	7.50	33.15	" broken ; many stems.
Called China black tea.	4.54	2.80	1.74	0.00	7.65	37.70	" broken ; many stems.

W. M. CONKLIN, INSPECTOR.

.....	4.76	2.96	1.72	0.08	7.75	35.55	Tea leaves broken ; stems.
.....	4.72	3.30	1.38	0.04	7.75	38.95	" broken ; many stems.

7-8 EDWARD VII., A. 1908

DESCRIPTION OF AND RESULTS OF
DISTRICT OF MANITOBA—

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Price.	
1906.					cts.	
Sept. 12..	Tea, Black.....	25793	Foley, Lock & Larson, Win-nipeg.	1 lb.	25	Packed by vendors
" 12..	"	25794	Jobin, Marrin & Co., Winni-peg.	1 "	35	Nectar Tea Co., Ceylon.
" 12..	"	25795	The A. Macdonald Co., Win-nipeg.	1 "	30	Packed for vendors
" 12..	"	25796	Codville & Co., Winnipeg...	1 "	...	Packed by vendors
" 12..	"	25797	Hicks Bros. & Co., Winni-peg.	1 "	30	Payne & Co., Lon-don, Eng.
" 12..	Tea, Ceylon	25798	G. F. & J. Galt, Winnipeg..	1 "	35	Blue Ribbon Mfg. Co.

DISTRICT OF CALGARY—

Sept. 12..	Tea, Indian.....	28692	L. T. Newburn, wholesale, Calgary.	1½ lb.	55	Ram Sals Pure In-dia Tea.
" 12..	Tea, Ceylon.....	28693	G. F. & J. Galt, wholesale, Calgary.	1½ "	45	Put up by vendors.
" 12..	"	28694	Codville, Smith Co., whole-sale, Calgary.	1½ "	55	Salada Tea Co., Ltd.
" 12..	"	28695	Campbell, Wilson & Horne, wholesale, Calgary.	1½ "	50	Campbell Bros. & Wilson, Winni-peg, Man.

DISTRICT OF BRITISH COLUMBIA—

Aug. 28...	Black Tea.....	28173	J. W. Charlesworth, retail, 902 Granville Street, Van-couver, B.C.	1 lb.	25	W. Braid & Co., Vancouver, B.C.
" 29...	"	28174	J. Murchir,, Orient Tea Co., Cordora St. West, Van-couver, B.C.	1 "	20	" "
" 29...	Green Tea.....	28177	Kelly, Douglas & Co., Ltd., wholesale, Vancouver, B.C.	1½	45	P. C Lagan, Tor-onto.
" 29...	Black Tea.....	28180	J. W. McMillan & Co., whole-sale, Vancouver, B.C.	1 "	20	Vendors.
" 30...	Green Tea.	28185	Colombo Tea Co., retail, Hastings St., Vancouver, B.C.	1 "	30	Young Bros., Van-couver & Seattle.

SESSIONAL PAPER No. 14

EXAMINING 89 SAMPLES OF TEA—*Concluded.*W. M. CONKLIN, INSPECTOR—*Concluded.*

Inspector's Report.	RESULTS OF ANALYSIS.						Botanical Examination.
	ASH.				Moisture.	Hot Water Extract.	
	Total.	Water Soluble.	Acid Soluble.	Acid Insoluble.			
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
.....	5.04	2.98	1.88	0.18	7.70	31.65	Tea leaves much broken.
.....	4.62	2.76	1.86	0.00	7.75	35.75	" broken.
.....	4.64	3.02	1.62	0.00	7.68	36.20	" much broken ; stems.
.....	5.80	4.12	1.68	0.00	7.55	36.55	" broken ; a few stems.
.....	4.50	3.04	1.46	0.00	7.70	33.25	" broken ; stems.
.....	4.72	3.00	1.50	0.22	7.10	33.35	" small ; broken ; a few stems.

W. FLETCHER, INSPECTOR.

.....	5.70	3.78	1.70	0.22	7.10	36.00	Tea leaves much broken ; stems.
.....	5.06	3.32	1.58	0.16	6.50	34.65	Tea leaves broken ; stems.
.....	4.42	2.90	1.46	0.06	7.75	36.40	" large ; broken.
.....	4.28	2.72	1.50	0.06	7.65	35.60	" much broken ; stems.

E. B. PARKINSON, INSPECTOR.

Star of India Green Label brand. This tea is put up in packages marked W. Tufts & Sons. Vendor having bought the business from them and using their old labels and wrappers. Imported.	5.28	3.18	2.02	0.08	8.20	34.65	Tea leaves broken ; stems.
Vendor did not know the name or brand ; no name or brand on package. Imported.	4.40	3.20	1.14	0.06	7.80	34.85	" large ; broken
'Salada brand.' Guaranteed pure uncoloured natural leaf Ceylon green and superior to that of finest Japan and has the advantage of being cleanly prepared.	4.16	2.44	1.72	0.00	6.90	42.30	" broken ; many stems.
Imported. Dandie No. 2 brand.	5.06	2.20	2.64	0.22	8.40	32.75	Tea leaves large : broken stems.
Japan tea. Imported.	5.46	3.90	1.26	0.30	7.85	35.75	Tea leaves broken.

APPENDIX G.

BULLETIN No. 131—BUTTER, 1906.

OTTAWA, January 31, 1907.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—In October of last year certain samples of butter were transmitted to you by Mr. J. A. Ruddick, Dairy Commissioner, as having been obtained in the city of Quebec and suspected to be spurious. On examination they proved to be largely adulterated with foreign fat and thereupon the collection of a larger number of samples was authorized by you. These were obtained in the month of November and are described, with the results of their examination, in the tabulated statement attached to this report. The following is a summary of the results obtained :—

Inspection District.	Genuine.	Doubtful.	Adulterated.	Total.
Nova Scotia.....	6	0	0	6
Prince Edward Island.....	2	0	1	3
New Brunswick..	6	0	0	6
Quebec..	15	0	1	16
St. Hyacinthe.....	7	0	1	8
Montreal..	6	2	4	12
Ottawa..	7	1	0	8
Kingston.....	8	0	0	8
Toronto..	10	0	0	10
London..	8	0	0	8
Manitoba.....	7	1	0	8
British Columbia...	8	0	0	8
	90	4	7	101

In the foregoing I have classed a sample containing over 16 per cent water and one with less than 80 per cent butter fat as doubtful although pronounced genuine by the district analyst. The adulterated samples comprise five which contain excessive quantities of water and two which consist very largely of foreign fat. From the latter fact it would appear that oleomargarine in small quantities is either being imported into Canada or is being manufactured here. In order that the public and the trade may be warned of this I beg to recommend the publication of this report.

I have the honour to be, sir,
Your obedient servant,
THOMAS MACFARLANE,
Chief Analyst.

7-8 EDWARD VII., A. 1908

DESCRIPTION of 101 Samples of Butter

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	COST.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of Nova Scotia— R. J. Waugh, Inspector.</i>		Cts.	
Nov. 6	Butter.....	27208	Hutchinson & Power, Halifax, N.S.	1½ lbs.	33	Not known.....
" 6	"	27209	Smith & Proctor, Halifax, N.S.	1¼ "	28	"
" 6	"	27210	P. T. Shea, Halifax, N.S.	1¼ "	35	R. Starratt, Bass River, N.S.
" 6	"	27211	O'Neil & Mulcahey, 22 Barrington St., Halifax, N.S.	1¼ "	37	Acadia Dairy Co., Wolfville, N.S.
" 8	"	27216	Shand Bros., Windsor, N.S.	1¼ "	31	John Baker, Windsor, N.S..
" 8	"	27217	Murphy & DeMont, Windsor, N.S.	1¼ "	32	Not known.....
			<i>District of Prince Edward Island—T. Moore, Inspector.</i>			
Nov. 5	Butter.....	28328	R. T. Holman, Summerside.	1½ lbs.	35	Kenford Wait, Wilmot, P.E.I.
" 6	"	28332	A. Gates & Co., Charlottetown.	1½ "	42	Dunstaffnage Dairy Co., Dunstaffnage, P.E.I.
" 6	"	28333	Stewart & Son, Charlottetown.	1½ "	35	M. McEachern, Lot 48, P.E.I.
			<i>District of New Brunswick—J. C. Ferguson, Inspector.</i>			
Nov. 5	Butter, Creamery.	24278	W. H. Bell, 92 King St., St. John, N.B.	1½ lbs.	48	Vendor.....
" 6	" Dairy.....	24279	P. Nase & Son, Ltd., 2-14 Main St., St. John, N.B., north end.	1½ "	45	W. T. Coburn, Harvey Station, York Co., N.B.
" 6	" Creamery...	24280	Maritime Dairy Co., Ltd., 159 Main St., St. John N.B., north end.	1½ "	40	Sussex Creamery, Sussex Kings Co., N.B.
" 6	"	24281	Sussex Milk and Cream Co., Ltd., 158 Pond St., St. John, N.B.	1½ "	42	Vendors.....
" 7	" Dairy.....	24282	Megarity & Kelly, Marsh Bridge, St. John, N.B.	1½ "	42	Slocum & Ferris, City Market, St. John, N.B.

SESSIONAL PAPER No. 14

Examined by the District Analysts.

Inspector's Report.	RESULTS OF ANALYSIS BY DISTRICT ANALYST.						READINGS OF BUTY- RO : REFRACTO- METER AT 25° C. BY A. MCGILL.		DISTRICT ANALYSTS.	
	Moisture.	Fat.	Salt.	Curd.	Reichert Meissl No.	Specific gra- vity of fat at 100 compar- ed with water at 100° C.	Reading.	Opinion.	Remarks.	Name.
	p.c.	p.c.	p.c.	p.c.		p.c.				
Said to be manufac- tured in Manito- ba. Wholesaler.	13.20	81.28	2.99	2.52	27.19	.....	52.2	Genuine..	Genuine..	M. Bowman.
Said to be Ontario butter. Sold as cooking butter; wholesale.	7.75	85.56	2.93	1.74	26.58	.....	52.2	" ..	" ..	"
Sold as creamery butter; put up in 2 lb. blocks; wholesale and re- tail.	12.64	80.03	5.29	2.03	27.26	.....	51.0	" ..	" ..	"
Sample sold as creamery butter; retail dealer.	13.43	81.76	2.61	2.19	26.52	.....	51.0	" ..	" ..	"
Sold as dairy but- ter.	11.85	82.51	4.42	1.21	25.16	.....	51.1	" ..	" ..	"
Purchased by ven- dors from H. D. Woodworth, Kingston, N.S..	11.65	81.55	5.81	0.99	27.59	.....	50.9	" ..	" ..	"
Dairy butter in prints and sold to vendor as pure butter.	11.87	84.47	2.18	1.47	27.34	.....	51.0	Genuine..	Genuine..	M. Bowman.
This sample of but- ter is made and put up by the Dunstaffnage Creamery Co.	11.78	83.39	4.19	0.63	26.57	.....	51.2	" ..	" ..	"
Dairy tub butter; bought from Mc- Eachern and re- tailed by Stewart & Son.	13.54	78.46	5.97	2.02	30.50	.....	51.5	" ..	Adulter'd; contain'g less than 80 per ct of butter fat.	"
From 2 lb. bar. Half lb. creases.	11.65	82.89	3.79	1.66	25.40	.....	51.1	Genuine..	Genuine..	M. Bowman
From 1 lb. bars....	12.24	81.92	3.87	1.95	27.84	.....	52.2	" ..	" ..	"
From 2 lb. bar ...	11.24	82.95	3.83	1.97	24.40	.....	52.2	" ..	" ..	"
From 2 lb. bar....	8.27	86.72	2.93	2.07	25.52	.....	53.0	" ..	" ..	"
Dairy butter; from 32 lb. tub on re- tail in store; said to be New Bruns- wick product.	8.21	81.08	8.92	1.78	26.47	.....	52.0	" ..	" ..	"

7-8 EDWARD VII., A. 1908

DESCRIPTION of 101 Samples of Butter

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	COST.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of New Brunswick—Con.</i>		Cts.	
Nov. 7	Butter, Dairy... ..	24283	J. D. McAvity, 39 Brussels St., St. John, N.B.	1½ lbs.	42	Orland S. Dykeman, 1-5 Camden St., St. John, N.B.. north end.
			<i>District of Quebec—E. Béland, Inspector.</i>			
Nov. 19	Butter.....	26064	J. B. Renaud et Cie, 126 St. Paul.	1 lb.	25	Dairy St. Raymond, Portneuf.
" 19	"	26065	" "	1 "	23	Alphonse Nicol, St. Simon..
" 19	"	26066	" "	1 "	23	Louis Bélanger, St. Jean, Port Joli.
" 20	"	26067	" "	1 "	19	Emond & Côte, Quebec.....
" 7	"	26028	Chas. Maranda, Finlay Market, Que.	1 "	20	Unknown.....
" 7	"	26029	Edmond Sylvain, Finlay Market, Que.	1 "	22	"
" 7	"	26030	David Lacombe, Hall St. Pierre, Que.	1 "	24	Emond & Côte, Quebec.....
" 7	"	26031	Arthur Lemieux, Hall St. Pierre, Que.	1 "	22	Unknown.
" 7	"	26032	Edouard Gigeare, Hall St. Pierre, Que.	1 "	24	Emond & Côte, Quebec..
" 8	"	26033	R. Ruthman & Son, Montcalm Market, Que.	1 "	25	" "
" 8	"	26034	Thos. Martin, Montcalm Market, Que.	1 "	25	J. B. Renaud & Cie.....
" 8	"	26035	François Boutet, Montcalm Market, Que.	1 "	26	St. Amselme Beurrerie, Que.
" 8	"	26036	Boutet & Lavoie, Berthelot Market, Que.	1 "	24	Emond & Côte, Quebec..
" 8	"	26037	F. X. Blouin, Berthelot Market, Que.	1 "	24	Rioux & Cie., Quebec.....
" 8	"	26038	" "	1 "	25	J. B. Renaud & Cie.....
" 9	"	26039	Jean Drolet, Hall Champlain.	1 "	25	Kelly, St. Agathe....
			<i>District of St. Hyacinthe J. C. Rouleau, Inspector.</i>			
Nov. 7	Butter, Pastry .	567	Gervais & Dionne, St. Jean, Que.	1½ lbs.	38	J. Langlois & Cie., Montreal
" 8	"	568	G. A. Fruax, Farnham, Que.	2 "	40	J. Lefebvre, Bury, Que.....
" 9	" Cooking.	569	Couture & Moore, Sherbrooke, Que	30 oz.	45	Jos. Demers, Shefford
" 13	"	570	A. Magnan, Sorel, Que..	1½ lbs.	33	W. Champagne, 191-195 Rue St. Paul, Montreal.

SESSIONAL PAPER No. 14

Examined by the District Analysts—*Continued.*

Inspector's Report.	RESULTS OF ANALYSIS BY DISTRICT ANALYST.						READINGS OF BUTY- RO : REFRACTO- METER AT 25° C. BY A. MCGILL.		DISTRICT ANALYSTS.	
	Moisture.	Fat.	Salt.	Curd.	Reichert Meissl No.	Specific gra- vity of fat at 100 compar- ed with water at 100° C.	Reading.	Opinion.	Remarks.	Name.
	p.c.	p.c.	p.c.	p.c.		p.c.	°			
From 30 lb. box on retail in store; furnisher to Mr. McAvity, Or- land S. Dyke- man; said to be Carleton Co., N.B., butter.	10.27	82.03	5.88	1.81	25.26	.....	52.9	Genuine..	Genuine..	M. Bowman.
Taken from 50 lbs.	12.60	82.61	2.81	1.79	28.8	0.8994	51.9	Genuine	Genuine..	Dr. J. T. Don- ald.
" 50 "	9.89	83.39	4.19	0.75	33.0	0.8956	52.2	" ..	" ..	"
" 50 "	14.59	76.48	5.58	1.72	31.6	0.9024	50.4	" ..	" ..	"
" 35 "	11.04	83.42	2.05	1.32	3.0	0.8948	57.5	Adulterat- ed.	Adulter'd; contain'g little if any but- ter fat.	"
" 45 "	10.72	80.65	5.71	1.56	29.1	0.9026	52.5	Genuine..	Genuine..	"
" 22 "	7.53	86.78	2.59	1.72	33.3	0.9039	52.6	" ..	" ..	"
" 45 "	6.76	88.30	1.62	2.46	2.90	0.9063	52.5	" ..	" ..	"
" 40 "	13.79	80.33	2.32	2.25	35.2	0.9049	51.6	" ..	" ..	"
" 45 "	12.27	83.92	1.09	1.34	31.5	0.9025	51.0	Gen.; s'ple very mouldy.	" ..	"
" 40 "	12.79	81.99	2.22	1.57	32.0	0.9041	51.6	Genuine.	" ..	"
" 45 "	10.01	84.80	3.08	1.02	29.3	0.9041	50.8	" ..	" ..	"
" 40 "	11.24	84.10	2.28	1.59	27.8	0.9032	52.0	" ..	" ..	"
" 40 "	13.81	77.09	5.56	1.00	32.0	0.9050	50.9	" ..	" ..	"
" 45 "	14.44	79.13	1.70	2.86	24.0	0.9023	51.3	" ..	" ..	"
" 50 "	7.32	85.11	5.31	0.96	29.4	0.9043	51.2	" ..	" ..	"
" 50 "	11.39	76.80	8.64	1.32	27.0	0.9165	53.0	" ..	" ..	"
Box marked 2093 with blue pencil.	10.97	81.69	3.21	2.51	31.6	0.9020	50.2	Genuine	Genuine..	Dr. J. T. Don- ald.
No special mark on the box.	13.01	80.80	2.96	2.23	32.6	0.9063	52.5	" ..	" ..	"
Taken out of a 25 lb. box.	9.59	83.89	3.61	1.70	27.2	0.9004	51.3	" ..	" ..	"
Taken out of a tub of about 70 lbs.	9.92	82.96	4.29	2.19	2.1	0.9003	57.8	Adultera- ted.	Adultera- ted, con- taining little if any but- ter fat.	"

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DESCRIPTION of 101 Samples of Butter

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of St. Hyacinthe</i> --Con.		Cts.	
Nov. 17	Butter, Cooking....	572	Thos. Hébert, St. Hyacinthe.	1½ lbs.	33	A. Jeannotte, St. Hyacinthe.
" 17	" Table	573	E. Benoit, St. Hyacinthe	1 "	25	Beauregard & Cie., Lapresentation
" 17	" "	574	U. Jeanotte "	1 "	26	N. Lajeunesse, St. François.
" 17	"	592	Ed. Viens, St. André, St. Thomas d'Aquint.	2 "	25	Vendor
			<i>District of Montreal—</i> <i>J. J. Costigan, Inspector.</i>			
Nov. 12	" Creamery ...	31501	C. Spector & Co., 18 Ontario E., Montreal.	1½ lbs.	41	Gunn, Langlois & Co.....
" 13	"	31602	A. E. Savageau, 667 St. Catherine E., Montreal	1½ "	34	Manitoba Dairy....
" 13	" Creamery....	31603	" " ..	1½ "	39	Fortier & Monnette.....
" 13	" " ..	31604	A. Rivet, 456 St. Catherine E., Montreal.	1½ "	42	Z. Limoges, Montreal....
" 16	" "	31605	J. A. Marceau, Bonsecour Market, Montreal.	2 "	50	M. Desjardins, Montreal...
" 16	" Dairy	31606	B. Lavoie, Bonsecour Market, Montreal.	1½ "	35	Weston, Ont.....
" 16	" Creamery....	31607	D. Desautels, St. James Market, Montreal.	1½ "	41	Z. Limoges, Montreal. ...
" 16	" Cooking....	31608	" " ..	1½ "	30	Not known.
" 26	"	31609	M. Lavut, 113 St. Maurice, Montreal.	1½ "	42	Standard Dairy Co., Montreal
" 26	"	31610	Davies, Limited, retail branch, Chaboilez Sq., Montreal.	1½ "	30	Not known.....
" 26	"	31611	M. Desjardins et fils, 206 De Montigny East, Montreal.	2 "	46	M. Desjardins, St. Martin St.
" 26	"	31612	" " ..	1½ "	38	Not known.....
			<i>District of Ottawa—A. E. Sanderson, Inspector.</i>			
Nov. 13	Butter	29381	G. Stewart, 237 Bank St., Ottawa.	1½ lbs.	45	Rising Sun Creamery.
" 13	"	29385	P. D. Herbert, 228 Bank St., Ottawa.	1½ "	50	McCullough, Quebec
" 14	"	29389	Geo. Thomas, 63 George St., Ottawa.	1½ "	42	Mrs. Cassidy, Farleton.
" 14	"	29390	" " ..	1½ "	37	"
" 15	"	29395	A. Boivin, 80 Queen St. W., Ottawa.	1½ "	40	Ottawa Cold Storage.

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Examined by the District Analysts—Continued.

Inspector's Report.	RESULTS OF ANALYSIS BY DISTRICT ANALYST.						READINGS OF BUTY- RO : REFRACTO- METER AT 25° C. BY A. MCGILL.		DISTRICT ANALYSTS.	
	Moisture.	Fat.	Salt.	Curd.	Reichert Meissl No.	Specific gra- vity of fat at 100 compar- ed with water at 100 C.	Reading.	Opinion.	Remarks.	Name.
	p.c.	p.c.	p.c.	p.c.		p.c.				
Taken out of a tub of about 30 lbs.	9.90	83.83	2.66	2.09	32.1	0.9016	50.0	Genuine..	Genuine..	Dr. J. T. Don- ald.
.....	14.83	76.15	6.66	0.99	28.2	0.9027	51.2	" ..	" ..	"
From about a 20 lb. piece.	13.65	82.61	0.94	1.56	23.8	0.9057	51.2	" ..	" ..	"
Sold in ½ lb. cakes.	12.00	80.27	4.19	1.94	32.8	0.8994	51.5	" ..	" ..	"
Retail price, 27 cts. per lb.	15.15	78.84	3.57	1.41	28.6	0.8998	52.0	Genuine..	Genuine..	Dr. J. T. Don- ald.
Retail price, 24 cts. per lb.	11.27	82.25	1.92	2.73	32.2	0.8995	51.5	" ..	" ..	"
Retail price, 26 cts. per lb.	14.20	79.50	3.04	2.06	31.4	0.9007	51.0	" ..	" ..	"
Retail price, 24 cts. per lb.	10.39	84.38	1.69	1.90	27.5	0.9009	52.4	" ..	" ..	"
Sold as fresh cream- ery ; put up in 1 lb. rolls; retailed at 25 cts. per roll.	29.75	68.02	0.17	1.21	24.3	0.8987	51.4	" ..	Adultera- ted with water.	"
Sold as dairy but- ter ; retail price, 24 cts. per lb.	11.64	77.99	6.51	2.26	27.3	0.9010	52.0	" ..	Genuine..	"
Sold as creamery at 27 cts. per lb.	16.44	79.39	0.96	2.09	33.8	0.8915	52.4	" ..	Genuine but rather high in water.	"
Sold as cooking but- ter at 20 cts. per pound.	9.12	84.50	3.64	1.51	28.0	0.8991	50.9	" ..	Genuine..	"
Retailed at 23 cts. per lb. in 2 lb. blocks.	30.15	67.53	0.32	1.39	28.8	0.8994	51.9	" ..	Adultera- ted with water.	"
Sold as dairy	11.81	72.80	12.11	1.70	31.8	0.9034	50.5	" ..	Genuine but too much salt.	"
Retail price, 23 cts. per lb. in 2 lb. rolls ; dairy.	23.47	71.55	2.94	1.19	29.6	0.9073	50.6	" ..	Adultera- ted with water.	"
Retail price, 25 cts. per lb. Sold as creamery ; put up in 1 lb. blocks.	22.94	72.65	2.74	1.06	27.9	0.9079	52.0	" ..	" ..	"
Creamery butter .	13.81	83.26	1.70	1.23	24.5	.....	51.8	Genuine..	Genuine..	Dr. F. X. Va- ade.
.....	13.27	82.36	2.88	1.49	23.9	.....	52.0	" ..	" ..	"
Farmer's butter...	11.97	82.39	3.93	1.71	25.0	.....	53.8	Probably genuine.	" ..	"
" ..	14.57	78.78	4.55	2.10	25.7	52.2	Genuine.	Deficient in fat.	"
.....	9.63	81.45	7.23	1.69	31.8	51.3	" ..	" ..	"

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DESCRIPTION of 101 Samples of Butter

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of Ottawa—Con.</i>		Cts.	
Nov. 15	Butter	29396	A. Boivin, 80 Queen St., W., Ottawa.	1 lb.	28	McCullough, Quebec.....
" 15	"	29399	J. Currell, 86 Queen St. W., Ottawa.	1 "	27	Mrs. Baird, Fitzroy.....
" 19	"	32304	R. E. Powell, 285 Wellington St., Ottawa.	1½ "	45	Not known.....
			<i>District of Kingston— J. Hogan, Inspector.</i>			
Nov. 5	Butter.....	31001	Davies Co., Princess St., Kingston.	1 lb.	26	Davies Co., Dairy, Toronto.
" 5	"	31002	" " ..	1 "	35	Maple Leaf Standard Dairy.
" 5	"	31003	J. Thomas Polley, Brock St., Kingston.	1 "	30	Kingston Milk Depot.....
" 5	"	31004	J. Cullen, Princess St., Kingston.	1 "	30	Maple Leaf Standard Dairy.
" 5	"	31006	Charles Sanders, Princess St., Kingston.	1 "	30	" " ..
" 5	"	31008	G. H. Williams, Princess St., Kingston.	1 "	30	J. H. Peel, Victoria Road...
" 5	"	31009	Anderson Bros., Princess St., Kingston.	1 "	30	Maple Leaf Standard Dairy.
" 6	"	31011	Joseph Lemmon, Montreal St., Kingston.	1 "	30	Not known.....
			<i>District of Toronto— T. Kidd, Acting Inspector</i>			
Nov. 14	Butter.. ..	30222	J. A. McCrea & Son, Guelph.	1 lb.	25	Vendors.....
" 15	"	30223	R. Higgins & Son, 802 Yonge St., Toronto.	1½ "	48	White & Co., Front St., Toronto.
" 15	"	30224	W. M. Davies & Co., Yonge St., Toronto.	1½ "	48	Jacob Steadalband, Elnira, Ont.
" 16	"	30227	Park, Thompson & Co., Toronto.	1½ "	38	Vendors.....
" 16	"	30228	A. Provan, King Street, Toronto.	1½ "	45	Mrs. C. McKenna, Lloydtown County York.
" 19	"	30231	Kidd & Co., Athlone, Ont.	1½ "	35	Mrs. Harry Trump, Adjala Township, Co. Simcoe.
" 19	"	30235	George E. Reynolds, Beeton, Ont.	1½ "	40	Mrs. William Strongman, Tecumseth Township.
" 20	"	30237	J. M. Courtney, Tottenham, Ont.	1½ "	40	Miss Delemere, Colgan, Ont.
" 21	"	30239	Swan Bros., 162 King St., Toronto.	1½ "	42	James Young, Earin Township, Co. Wellington.
" 21	"	30240	Gunn Co., Ltd., 48 Front St., Toronto.	1½ "	30	Not known.....

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DESCRIPTION of 101 Samples of Butter

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906.			<i>District of London— T. Kidd, Inspector.</i>		Cts.	
Nov. 2	Butter.....	30195	William Cherney, Windsor, Ont.	1 lb.	28	J. S. Tester, Bothwell, Ont..
" 3	"	30201	John McCorbey, Chatham, Ont.	1 "	23	Mrs. Cotman, Chatham Township.
" 7	"	30211	Williams & Purcill, Seaforth, Ont.	1½ "	35	Not known.....
" 8	"	30216	John Beattie, Seaforth, Ont.	1 "	23	Mrs. Bell, McKillop Township, Co. Huron.
" 9	"	30217	S. M. Edwards, butter merchant, Mitchell, Ont.	1½ "	30	Mrs. Seyburn, Fullerton Township, Perth Co.
" 10	"	30218	William Pickard, Seaforth, Ont.	1½ "	30	Not known.....
" 8	"	30212	O. C. Whitely, Goderich, Ont.	1 "	24	M. Ford, general merchant, Mitchell, Ont.
" 8	"	30214	Henry J. Moorish, Goderich, Ont.	1 "	25	M. Watson, Kincardine, Ont.
			<i>District of Manitoba— W. M. Conklin, Inspector.</i>			
Nov. 27	Butter....	25925	W. J. Kennedy, Winnipeg.	1 lb.	30	Not known.....
" 27	"	25926	J. A. Parks, Winnipeg..	1 "	35	The Dominion Produce Co., Winnipeg.
" 27	"	25927	The National Creamery Co., Winnipeg.	1 "	..	Vendors.....
" 28	"	25928	John Donnelly & Son, Winnipeg.	1 "	30	Not known.....
" 28	"	25929	H. Sylvester, Winnipeg.	1 "	35	"
" 28	"	25930	A. Jackson, Winnipeg..	1 "	30	Imperial Produce Co., Winnipeg.
" 28	"	25931	J. R. Cote, St. Boniface.	1 "	30	Not known.....
" 28	"	25932	T. Pelletier, St. Boniface.	1 "	30	"
			<i>District of Calgary— W. Fletcher, Inspector.</i>			
			No collections made in the District of Calgary.			

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Examined by the District Analysts—*Continued.*

Inspector's Report.	RESULTS OF ANALYSIS BY DISTRICT ANALYST.						READINGS OF BUTY- RO : REFRACTO- METER AT 25° C. BY A. MCGILL.		DISTRICT ANALYSTS.	
	Moisture.	Fat.	Salt.	Curd.	Reichert Meissl No.	Specific gra- vity of fat at 100 compar- ed with water at 100° C.	Reading.	Opinion.	Remarks.	Name.
	p.c.	p.c.	p.c.	p.c.		p.c.				
.....	9.17	84.94	1.34	3.70	23.57	0.9049	53.9	Probably genuine.	Genuine..	Dr. W. H. Ellis
Farmer's butter...	6.26	89.98	1.88	1.40	24.31	0.9010	52.0	Genuine..	" ..	"
"	12.05	79.56	5.53	1.68	27.61	0.9011	51.6	" ..	" ..	"
.....	6.29	86.55	5.68	1.21	28.42	0.9005	52.0	" ..	" ..	"
.....	5.98	90.64	0.05	1.27	24.97	0.8980	52.2	" ..	" ..	"
Farmer's butter...	10.08	81.00	6.67	1.68	25.10	0.9060	52.0	" ..	" ..	"
.....	5.18	93.46	0.57	0.07	29.85	0.9004	52.0	" ..	" ..	"
.....	7.87	88.46	2.98	0.50	29.97	0.9050	52.0	" ..	" ..	"
Farmer's	8.04	88.95	1.43	1.29	26.78	0.8976	52.1	Genuine..	Genuine..	Dr. W. H. Ellis
.....	7.78	89.26	1.59	1.72	26.69	0.8982	51.9	" ..	" ..	"
.....	9.04	85.83	3.56	1.61	27.50	0.9006	51.5	" ..	" ..	"
.....	5.99	91.30	1.25	1.23	23.93	0.8974	51.9	" ..	" ..	"
.....	4.13	93.58	0.93	1.26	30.70	0.8999	51.5	" ..	" ..	"
.....	9.33	88.10	1.34	0.99	31.01	0.9011	52.0	" ..	" ..	"
Farmer's	6.66	89.67	2.19	1.13	25.43	0.8974	51.0	" ..	" ..	"
.....	5.27	91.56	1.61	1.23	20.12	0.8984	51.8	" ..	Too low in volatile fatty ac- ids.	"

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DESCRIPTION of 101 Samples of Butter

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1906			<i>District of British Columbia—E. B. Parkinson, Inspector.</i>		Cts.	
Nov. 13	Butter.....	32001	The H. A. Edgett Co., Ltd., Hastings St., Vancouver, B.C,	1½ lbs.	55	The H. A. Edgett Co., Ltd. Abbotsford, B.C.
" 13	"	32002	J. J. Griffin & Co., wholesale, Water St., Vancouver, B.C.	1½ "	30	Not known.
" 13	"	32003	H. Albert, Carrall St., Vancouver, B.C.	1½ "	45	The Provincial Government Creamery, Alberta.
" 13	"	32004	F. Filion, Carrall St., Vancouver, B.C.	1½ "	45	The Chilliwack Creamery, Chilliwack, B.C.
" 13	"	32005	W. J. McMillan & Co., wholesale, Alexander St., Vancouver, B.C.	1½ "	30	The Victoria Creamery Association, Victoria, B.C.
" 13	"	32006	The City Grocery, Westminster Ave., Vancouver, B.C.	1½ "	30	J. Y. Griffin & Co., Vancouver, B.C.
" 13	"	32007	S. T. Wallace, Westminster Ave., Vancouver, B.C.	1½ "	30	F. R. Stewart, Vancouver, B.C.
" 13	"	32008	Ford, Saxton & Co., Drake St., Vancouver, B.C.	1½ "	40	Vendors.

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Examined by the District Analysts—*Concluded.*

Inspector's Report	RESULTS OF ANALYSIS BY DISTRICT ANALYST.						READINGS OF BUTY- RO: REFRACTO- METER AT 25° C. BY A. MCGILL.		DISTRICT ANALYSTS.	
	Moisture.	Fat.	Salt.	Curd.	Reichert Meissl No.	Specific gra- vity of fat at 100° compar- ed with water at 100° C.	Reading.	Opinion	Remarks.	Name.
	p.c.	p.c.	p.c.	p.c.		p.c.				
'Edgewood brand.' This butter is manufactured by the firm at their own dairy at Ab- botsford, B.C.	8.35	88.75	1.17	1.73	26.6	0.8677	52.0	Genuine.	Genuine.	Dr. C. J. Fa- gan.
This butter is pur- chased by ven- dors in Alberta and Manitoba and shipped to Vancouver by the car load and there repacked into 1 lb. blocks by vendors.	8.50	88.00	0.53	2.97	25.7	0.8684	51.0	"	"	"
This butter is bought in tubs and boxes and is repacked into 1 lb. blocks by vendor.	4.70	92.80	0.75	1.75	32.0	0.8709	51.0	"	"	"
Tub butter.	7.30	89.50	1.70	1.50	26.10	0.8698	52.2	"	"	"
Put up in 1 lb. blocks. The Vic- toria Creamery Association, Vic- toria, B. C., on wrapper.	11.10	85.80	1.60	1.50	22.00	0.8691	51.5	"	"	"
No brand; sold as cooking butter; tub.	8.60	85.50	1.58	1.32	29.9	0.8653	51.6	"	"	"
Tub butter; no brand; sold as cooking butter.	5.97	88.95	3.04	2.06	26.8	0.8653	52.0	"	"	"
Purchased at the dairy.	12.10	84.40	1.93	1.57	24.6	0.8653	52.1	"	"	"

APPENDIX H.

BULLETIN No. 132—BREAKFAST FOODS.

OTTAWA, March 25, 1907.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR—On the 22nd October last a collection of what are known as ‘ Breakfast Foods ’ was authorized by you and the samples were obtained in the open market by the food inspectors in the month of November following. They have since been examined in this Laboratory, and the results are detailed in the table which accompanies this report, in which the names of the various brands, their vendors and manufacturers, and some of the claims made by the latter for their articles, are also given. The following is a memorandum of the number of samples obtained in the various inspection districts :—

	Samples.
Nova Scotia	6
P. E. Island	3
New Brunswick	6
Quebec	12
St. Hyacinthe	10
Montreal	12
Ottawa	8
Kingston	8
Toronto	10
London	8
Manitoba	8
British Columbia	8
Total	99

The food inspectors were instructed to obtain as great a variety of these ‘ breakfast foods ’ as possible, and perhaps some have been collected which do not properly belong to that class, and which do not much differ from the rolled oats or wheaten flours described in former Bulletins (see Nos. 98 and 127). The whole of the work connected with these 99 samples was carried out by Mr. J. G. A. Valin and is to be considered as having a bearing on some of the points referred to by Mr. McGill in his report of 10th December, 1902, published in Bulletin No. 84 on Cereal Breakfast Foods. The expression “ Breakfast Foods ” seems to be used for indicating that an addition of some sort has been made to the cereal used as a basis, or that the latter has received a certain amount of “ preparation ” or “ cooking.” Mr. McGill says that the claim of the manufacturers of the cooked or malted foods is that by the process to which they have been subjected the “ insoluble starch is converted into soluble maltose and dextrine.” The extent to which such alterations have been made seems to be best indicated by the percentages of alcoholic or aqueous extract as ascertained by Mr. Valin. The process followed by him is known as the Crysolite or Asbestos Fibre Method, and consists in distributing the fine-ground sample through such fibre contained in Macfarlane tubes, and subjecting these to drying and hot percolation which give the results detailed in the tabulated statement. The first in the columns of results contains the total proteids, being the nitrogen determined by the Kjeldahl-Gladding method multiplied by 6.25. The second is headed “ moisture ” and signifies loss at 100° C. The third column gives the loss to

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petrolie ether and is equivalent to fat. The fourth column shows the loss which the sample experienced from hot percolation with alcohol of 92 per cent., which is capable of removing sugars as well as some soluble proteids. Column five gives the substances removed by warm water, after the alcohol treatment, which are chiefly dextrines originally present in the sample or derived from the starch in the "preparation" of the breakfast foods. The headings of the other columns explain themselves.

In the tabulated statement the results are given in the order of the various collection districts and as obtained by the food inspectors, but in the following arrangement I have placed the analyses together which belong to those foods of which more than one sample has been collected, and which seem therefore to have been in greatest demand. This tabulation also admits of indicating the average percentages of certain important constituents.

GRAPE NUTS.

No. of Sample.	Proteids N x 6.25.	Moisture.	Petrolie Ether Extract (Fat).	Hot Alcohol Extract (Sugars, &c.)	Warm Water Extract (Dextrines).	Crude Fibre.	Total Ash.	Starch ap- proxima- tely by difference.
28329	13.12	7.00	0.76	12.20	30.20	1.80	1.60	33.32
30202	10.94	4.72	0.40	14.96	31.84	1.70	1.06	34.38
25919	11.73	5.76	0.40	16.48	27.76	0.85	1.26	35.76
28190	11.67	5.00	0.00	15.68	27.84	1.00	1.42	37.39
Average	11.86	5.62	0.39	14.83	29.41			

PUFFED RICE.

25914	8.75	8.02	0.12	0.00	16.04	1.45	0.84	64.78
25916	8.31	8.24	0.00	0.00	20.80	0.75	1.00	60.90
	8.53	8.13	0.06		18.42			

QUAKER RICE.

32302	10.94	7.80	0.12	0.00	22.96	0.70	0.64	56.84
30204	11.35	9.20	0.00	0.00	17.12	0.60	0.40	61.33
30230	12.37	8.80	0.00	0.00	14.80	0.75	0.20	63.08
	11.55	8.60	0.04		18.29			

EGG-O-SEE.

582	12.06	8.16	0.20	1.92	11.80	2.50	1.82	61.54
27201	10.93	8.40	0.44	0.84	14.20	2.70	1.92	60.57
31624	13.25	7.48	0.52	0.44	14.84	1.90	1.40	60.17
25394	13.81	6.92	1.44	0.00	12.80	2.15	2.28	60.60
31018	12.25	8.04	0.00	2.20	12.48	1.70	1.88	61.45
	12.46	7.80	0.52	1.08	13.12			

CANADA FLAKES.

31615	11.87	7.20	0.20	2.88	11.52	2.25	2.56	61.52
29393	13.12	7.84	0.40	1.36	11.96	2.35	1.80	58.17
31015	12.56	7.84	1.00	4.32	13.36	2.40	2.56	55.96
31024	10.06	7.72	1.00	2.68	12.20	2.25	1.96	62.13
30220	13.12	8.56	0.32	2.92	11.40	1.60	1.92	60.16
25917	11.37	7.04	0.32	1.92	13.44	1.50	2.00	62.41
	12.01	7.70	0.54	3.18	12.31			

MALTA-VITA.

No. of Sample.	Proteids N. × 6·25.	Moisture.	Petrolie Ether Extract (Fat).	Hot Alcohol Extract (Sugar, &c.)	Warm Water Extract (Dextrines).	Crude Fibre.	Total Ash.	Starch ap- proxima- tely by difference.
28326	11·36	9·08	0·68	4·16	11·08	2·60	2·28	58·76
24291	12·25	5·75	1·20	4·20	11·68	2·60	2·28	60·04
26058	13·12	7·08	0·88	2·80	11·40	2·45	2·12	60·15
591	13·62	7·60	0·40	3·52	11·92	2·35	1·58	59·01
31618	14·00	7·16	0·40	2·64	11·28	2·00	1·60	60·92
30206	11·81	8·52	0·88	3·08	12·84	2·00	1·76	59·11
25911	10·50	7·44	0·00	1·80	14·40	1·65	1·62	62·59
	12·38	7·52	0·63	3·17	12·08			

ORANGE MEAT.

24294	11·87	9·76	0·56	2·08	9·92	2·99	1·36	61·56
26057	12·50	8·12	0·60	3·00	11·88	2·30	1·92	59·68
575	13·56	8·96	0·32	2·76	11·80	2·80	1·80	58·00
31614	13·62	6·92	0·48	4·20	12·84	2·35	2·00	57·59
31022	10·94	7·52	0·24	5·60	11·28	2·35	2·28	59·75
28189	11·37	8·00	0·28	7·04	12·16	1·50	1·80	57·89
	12·31	8·21	0·41	4·11	11·64			

VIM.

577	11·87	9·04	0·56	3·12	10·56	2·30	1·52	61·03
31613	13·56	7·60	0·08	3·96	11·92	2·35	2·00	58·53
	12·71	8·32	0·32	3·54	11·24			

BLANCO CERO.

28331	15·75	8·44	0·80	2·68	10·48	3·30	2·84	55·71
571	16·62	8·12	0·88	3·08	11·68	3·20	2·48	53·94
	16·18	8·28	0·84	2·88	11·08			

FORCE.

27202	10·50	7·84	0·52	2·28	9·88	2·55	1·66	64·77
27214	10·12	8·52	0·76	2·64	8·88	2·85	2·88	63·95
26055	13·43	8·40	1·40	2·72	10·24	2·70	1·64	59·47
31623	13·38	8·00	0·84	2·76	11·68	2·50	2·08	58·76
30207	10·94	8·44	0·96	0·84	11·64	2·48	1·52	63·18
32009	11·37	8·48	0·48	3·72	11·28	1·60	2·08	60·99
	11·62	8·28	0·83	2·49	10·60			

GUSTO.

27203	10·56	8·08	1·84	2·84	9·40	2·20	2·10	62·98
24290	12·93	6·80	1·36	3·36	8·40	3·50	1·80	61·85
26056	12·94	8·16	1·80	3·16	7·36	1·80	1·80	62·98
26061	12·93	8·56	1·60	0·92	11·36	2·00	1·60	61·03
576	11·37	8·92	1·44	1·28	10·52	2·40	1·22	62·85
31617	13·37	8·56	0·40	2·40	11·20	2·00	1·60	60·47
32303	13·25	6·56	1·12	3·44	12·00	3·30	2·04	58·29
30196	10·50	7·96	0·84	2·00	10·72	1·65	1·42	64·91
	12·23	7·95	1·30	2·42	10·12			

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MALT BREAKFAST FOOD.

No. of Sample.	Proteids N. x 6.25.	Moisture.	Petrolie Ether Extract. (Fat).	Hot Alcohol Extract (Sugars, &c.)	Warm Water Extract (Dextrines).	Crude Fibre.	Total Ash.	Starch ap- proxima- tely by difference.
27207	11.87	6.60	1.20	10.08	7.32	1.30	1.16	60.47
580	14.43	8.08	1.08	6.56	8.72	1.65	1.24	58.24
31621	15.31	6.76	0.60	6.72	10.08	1.10	1.24	58.19
31020	14.00	7.60	0.60	6.96	9.44	1.65	0.82	58.93
30242	12.37	7.28	0.52	7.96	9.80	1.20	1.06	59.81
30247	11.37	7.68	0.08	6.96	9.24	1.50	1.48	61.69
25920	11.73	7.24	0.00	8.08	8.72	0.50	1.64	62.09
	13.01	7.46	0.58	7.61	9.05			

PETIT JOHN'S B. F.

581	12.56	9.76	0.60	0.92	7.32	2.45	1.60	64.79
25918	9.62	7.68	0.48	2.40	7.72	1.25	1.42	59.43
	11.09	8.72	0.54	1.66	7.52			

RALSTON HEALTH B. F.

31622	15.87	9.52	1.00	2.80	7.17	1.45	1.36	60.83
28196	13.25	9.44	0.00	2.40	6.00	1.25	1.28	66.38
	14.56	9.48	0.50	2.60	6.58			

CREAM OF WHEAT.

27215	11.87	9.60	0.48	1.92	2.08	0.60	0.80	72.6
578	12.25	9.84	0.00	0.00	6.44	0.40	0.60	70.47
31620	13.83	9.44	0.32	0.00	7.76	0.50	0.40	67.75
29392	14.00	9.52	0.76	0.00	7.20	0.45	0.32	67.72
	12.99	9.60	0.39	0.48	5.87			

THE KING'S FOOD.

24293	13.12	8.00	1.00	3.32	5.44	1.80	1.98	65.34
579	12.81	8.88	0.96	1.68	5.92	2.00	1.84	65.
	12.96	8.44	0.98	2.50	5.68			

QUAKER OATS.

26059	16.18	7.88	4.84	3.48	4.70	1.85	1.68	59.39
26062	16.18	8.04	4.76	3.60	4.80	2.30	1.56	58.76
29391	16.87	7.48	6.16	2.16	6.08	1.70	1.74	57.81
31619	13.12	7.60	5.08	3.44	5.48	2.40	1.80	61.08
25915	14.00	7.65	5.20	1.80	5.16	1.95	1.28	62.96
	15.27	7.73	5.21	2.89	5.24	2.04	1.62	60.00

BREAKFAST FOOD—NO TRADE MARK GIVEN.

26043	13.81	9.68	0.72	1.60	4.72	1.50	1.30	66.67
26046	12.94	9.32	0.84	2.24	4.36	1.85	1.44	67.01
26054	12.85	9.40	0.76	1.44	3.96	2.20	1.60	67.79
	13.20	9.46	0.77	1.76	4.34			

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It is reasonable to assume that the greater the percentage of aqueous extract (after alcohol) found in the sample the greater is the extent to which the starch has been changed. In the following statement all the different brands collected have been arranged according to the amount of this percentage beginning with the highest.

No. of Sample.	Brand.	Proteids.	Fat.	Hot Alcohol Extract.	Aqueous Extract.
Average of 4 samples	Grape Nuts.	11.86	0.39	14.83	29.41
28105	Maltes Cereal	9.17	0.64	10.40	20.00
28188	Malta Ceres	14.00	0.24	6.48	18.72
Average of 2.	Puffed Rice.	8.53	0.66	0.00	18.42
3..	Quaker Rice.	11.55	0.04	0.00	18.29
31023	Toasted Corn Flakes.	7.88	0.64	5.00	17.48
31619	Granose Flakes.	11.00	0.16	4.56	13.92
30245	Norka.	14.00	2.16	6.16	13.68
30244	Apitezo.	15.31	0.00	3.52	13.44
29400	Zest.	12.75	0.56	1.40	13.44
Average of 5.	Egg-O-Sce	12.46	0.52	1.08	13.22
6.	Canada Flakes.	12.01	0.54	3.18	12.31
7.	Malta Vita.	12.38	0.63	3.17	12.08
6.	Orange Meat	12.31	0.41	4.11	11.64
2.	Vinn	12.71	0.32	3.54	11.24
2.	Blanco Cero	16.18	0.84	2.88	11.08
6.	Force.	11.62	0.83	2.49	10.60
31616	Swiss Food.	13.12	1.04	2.32	10.50
Average of 8.	Gusto	12.23	1.30	2.42	10.12
7.	Malt Break. F.	13.01	0.58	7.61	9.05
2.	Petit John's Break. F.	11.09	0.54	1.66	7.52
30205	Pancake Flour	10.50	0.16	4.00	7.28
24292	Shredded Wheat	12.68	1.20	0.00	7.08
30246	Buckwheat Flour	7.31	0.40	2.56	6.88
Average of 2.	Ralstons.	14.56	0.50	2.60	6.58
28193	Capitol Farina	8.31	0.60	0.00	6.40
30229	Cooks Flaked Rice.	11.62	0.00	0.00	6.24
32301	Beaver Oats	16.87	5.64	1.96	5.88
Average of 4.	Cream of Wheat	12.09	0.39	0.48	5.87
2.	The King's Food	12.96	0.98	2.50	5.68
28191	Man Hard B. F.	11.06	0.00	0.16	5.56
30203	Cerata Wheat.	10.50	0.36	0.00	5.48
Average of 5.	Quaker Oats	15.27	5.21	2.89	5.24
30199	Hecker's Homing.	8.75	0.84	0.80	5.00
26060	Saxon Oats.	16.18	4.32	3.20	5.00
31021	Quaker Corn Meal	8.12	6.48	1.60	4.88
30248	Hecker's Farina.	11.37	0.00	0.00	4.56
26063	Pilson's Oats	16.00	5.72	3.28	4.52
Average of 3.	Various B. F.	13.20	0.77	1.76	4.34
24295	Gritz.	14.68	1.96	3.36	3.76
30241	Hornby Oatmeal.	16.62	6.00	2.20	1.42

If reference is made to Bulletin No. 127, it will be found that the percentage of aqueous extract (after alcohol) contained in the 12 samples of rolled oats there described, which have had no previous cooking, averages 2.12 and never exceeds 3.00. It would therefore seem to be reasonable to conclude that those breakfast foods prepared from oatmeal which yield more than 3 per cent aqueous extract have experienced "cooking" to some extent. It does not appear, however, that many of these breakfast food samples have been prepared from oats because only the following contain such an amount of fat as would indicate that origin :—

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	Proteids.	Fat.	Alcohol extract.	Aqueous extract.
	p. c.	p. c.	p. c.	p. c.
Beaver Oats	16.87	5.64	1.96	5.88
Quaker Oats.....	15.27	5.21	2.89	5.24
Saxon Oats	16.18	4.32	3.20	5.00
Pilson's Oats.....	16.00	5.72	3.28	4.52

It will be observed that these samples have all yielded more than 3 p.c. aqueous extract, and it may be inferred that these foods have experienced an amount of "preparation" corresponding to the percentage stated.

In the following table will be found the average analysis of 12 samples of rolled oats described in Bulletin No. 127 as well as of 2 samples of porridge made from the same article the one (I) without addition and the other (II) with an appropriate quantity of common salt:—

	Total proteids.	Moisture.	Fat.	Alcohol extract.	Water extract.	Crude Fibre.	Total ash.	Starch ap- proxima- tely and by differ- ence.
		p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
Rolled oats (average)	12.56	8.71	4.74	3.77	2.12	1.64	1.45	65.01
Porridge I.	3.00	83.98	0.09	0.54	1.22	0.22	0.65	10.80
Duplicate.	2.88	83.11	0.12	0.07	1.31	0.26	0.62	11.62
Porridge II.....	3.00	82.96	0.20	1.14	2.38	0.20	0.92	9.20
Duplicate.	3.16	82.97	0.18	1.05	2.50	0.20	0.96	9.18

When these figures are calculated on the dry substance the results are as follows :

	Total proteids.	Moisture.	Fat.	Alcohol extract.	Water extract.	Crude Fibre.	Total Ash.	Starch ap- proxima- tely and by differ- ence.
		p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
Rolled Oats	13.76	...	5.19	4.13	2.32	1.80	1.59	71.21
Porridge I.....	18.72	...	0.55	0.34	7.62	1.37	3.90	67.41
" duplicate..	17.04	...	0.70	0.37	7.78	1.52	3.81	68.79
" No. II.....	17.60	...	1.17	6.69	13.97	1.18	5.39	53.98
" duplicate..	18.55	...	1.05	6.18	13.50	1.18	5.63	53.88

If the analyses of the four varieties of prepared oats above mentioned are calculated on their dry substance the resulting figures may be compared with those obtained from the analyses of the porridge samples. None of them however show more than 6.37 per cent. of aqueous extract which does not amount to one-half of that obtained when porridge is prepared in the old fashioned way. It is worthy of remark that the figures here recorded show that cooking oatmeal without salt is a very ineffective way of "predigesting" the starch which it contains. Porridge No. II, cooked with salt, contains twice the amount of soluble dextrines produced in preparing No. I. Another fact which is brought out by these tests is that the fat seems to disappear during the cooking. It is very probable, however, that it enters into some sort of combination with the proteids, such as renders it incapable of removal by the usual solvents. Dr. Chamberlain of Washington has

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found that the fat of wheaten flour in the process of baking bread also enters into combination with the proteids.

For by far the greater number of the samples described in the tabulated statement it is claimed that they are made from wheat and judged by their percentages of aqueous extract, most of them have experienced such amounts of preparation as to make them, in different degrees, more easily digested than wheaten flour. Samples of the latter frequently show as much as 4 per cent of aqueous extract after alcohol, but it would seem unreasonable to look upon any foods from wheat as specially prepared unless yielding much more than that percentage. In considering the question as to what degree of "cooking" a "prepared breakfast food" should have undergone it is scarcely possible to avoid enquiring as to what amount of change wheaten flour undergoes in baking. To ascertain this the following analyses were made by Mr. Valin (in exactly the same manner as all the examinations above described), of dried bread crumb and dried bread crust. The former (I) in drying lost 31·96 per cent of its weight and the latter (II) 50·82 per cent:—

Bread.	Total proteids.	Moisture.	P. E. extract.	Alcohol extract.	Water extract.	Crude Fibre.	Total Ash.	Starch by difference.
(I) Crumb	12·67	2·56	0·00	0·00	16·32	0·70	1·06	66·69
Duplicate . . .	12·56	2·08	0·00	0·00	15·64	0·60	1·16	67·96
(II) Crust	12·75	0·36	0·40	3·56	13·20	0·75	1·16	67·82
Duplicate . . .	12·81	0·48	0·40	4·00	12·88	0·70	1·00	67·83

When these figures are calculated on the dry substance they show that bread contains from 13 to 16·75 per cent of substances soluble in water after alcohol, an amount which much exceeds that contained in most of the breakfast foods described in the tabulated statement. Assuming dry bread to contain an average of 15 per cent aqueous extract, and the moisture contained in breakfast foods to be about 8 per cent, it follows that, to be as well "prepared" as bread, the foods ought to show 13·8 per cent of aqueous extract. This, as shown in the figures given above, is the case with only about twenty per cent. of the brands collected.

For a good many of the samples described it is claimed that an addition to them of malt extract or of sugars has been made. The extent of this addition is roughly shown in the percentage of hot alcohol extract. But in the preparations from wheat a certain amount of this percentage may represent gliadin. The amount of this and other substances usually removed from wheaten flour by hot alcohol percolation is about five per cent and therefore it would be unsafe to regard those samples containing less than that as having had any malt or saccharine addition. It was not thought necessary to estimate the sugars present or determine those produced in cooking any of the samples by the action of the malt diastase which they might contain. The latter operation seems to lie beyond the scope of a food analysis, and besides, while "cooking is recommended" for some of the foods, in others it is stated to be unnecessary. An approximate estimation of the residual or insoluble starch has been made from which it will be seen that the "predigestion" claimed for many of the foods is not by any means complete, and that the use of the saliva and gastric juice cannot yet be dispensed with.

It has not been found advisable to introduce into the description of the various brands described all the claims made for them, some of which remind one of patent medicine advertising. But the essential features of the claims made are placed on record, and it is impossible to avoid remarking on the different degrees of subdivision effected in their treatment. That varies from "rolling" to "flaking" of a very complete character in which the grains are brought into the condition of thin, semitranslucent laminae. It is quite possible that this thinning out increases the digestibility but it is a question as to whether this change is worth the extra cost. It is not easy to get at

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the price of these articles per pound owing to the indefinite and varying weights contained in the packages. But it seems to amount to from 5 to 23 cents per lb. Since oatmeal or wheaten flour is retailed at from 3 to 4 cents, it becomes a question as to how far the extra price is justified.

With reference to the question of adulteration it does not appear that any of the samples referred to in this report can be challenged with effect under any of the provisions of the Act. The names under which they are sold are too fanciful and indefinite and do not admit of being compared with their composition. Even in the case of those foods which claim to be "malted," and may not contain diastase it is doubtful as to whether they could be challenged in the absence of a standard.

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE.

Chief Analyst.

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RESULTS OF AN INSPECTION OF A COLLECTION

DISTRICT OF NOVA SCOTIA—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 5	Egg-O-See....	27201	J. Frank Crowe, Halifax, N.S.	1 lb....	10	Egg-O-See Cereal Co., Quincy, Ill., U.S.A.	Labelled 'Egg-O-See; made from choicest wheat; drawn from 1 lb. package.
"	5 Breakfast Food Force.	27202	Bauld Bros. & Co., Halifax, N.S.	1 "...	13	Force Food Co., Buffalo, N.Y.	Labelled 'the whole of wheat force combined with barley malt.'
"	5 Gusto	27203	John Tobin & Co., Halifax, N.S.	1 "...	10	The Hoco Mills Co., Buffalo, N.Y.	Labelled 'Gusto.'
"	5 Malt Breakfast Food.	27207	W. C. Anderson, George St., Halifax, N.S.	2 "....	18	The Malted Cereal Co., Burlington, Vt., U.S.A.	Labelled 'the choicest whole wheat combined with the best barley malt: rich in malt gluten and phosphate.'
"	7 Force Breakfast Food.	27214	S. L. Cross, Kentville, N.S.	1 "...	15	Force Food Co., Buffalo, N.Y.	Labelled 'the natural food for creating power, &c.'
"	8 Cream of Wheat.	27215	Wentworth Stores, Windsor, N.S.	2 "....	20	Cream of Wheat Co., Minneapolis, Min.	Sold as 'cream of wheat.'

DISTRICT OF PRINCE EDWARD ISLAND—

Nov. 5	Malta Vita...	28326	Brace & McKay, Summerside.	3 pkgs..	45	Malta Vita Pure Food Co.	Labelled 'concentrated malted food; ready to eat. Pure pre-digested, thoroughly cooked, prepared from selected wheat, barley malt and other ingredients.'
"	6 Grape Nuts...	28329	Geo. Rackham, Charlottetown.	3 "...	45	Postum Cereal Co., Battle Creek, Mich.	Labelled 'a food for brain and nerve centres; fully cooked; pre-digested; dextrose and grape sugar; made by special treatment from wheat and barley.'

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OF SAMPLES OF BREAKFAST FOODS.

R. J. WAUGH, INSPECTOR.

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Microscopical Exami- nation).
	Total Proteids, N = 6.25.	Moisture.	Petrolie Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch, approxi- mately by dif- ference.		
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.		
In flakes ; not sweet tasted.	10.93	8.40	0.44	0.84	14.20	2.70	1.92	60.57	27201	Apparently wheat ; granules much broken.
" "	10.50	7.84	0.52	2.28	9.88	2.55	1.66	64.77	27202	" "
" "	10.56	8.08	1.84	2.84	9.40	2.20	2.10	62.98	27203	Starch granules all broken.
Granular ; not sweet tasted.	11.87	6.60	1.20	10.08	7.32	1.30	1.16	60.47	27207	Wheat or barley starch ; probably a mixture.
Flaked ; not sweet tasted.	10.12	8.52	0.76	2.64	8.88	2.85	2.28	63.95	27214	Starch granules much broken ; apparently wheat.
Finely granular.....	11.87	9.60	0.48	1.92	2.08	0.60	0.80	72.65	27215	Wheat starch.

T. MOORE, INSPECTOR.

Flaked ; not sweet tasted.	11.36	9.08	0.68	4.16	11.08	2.60	2.28	58.76	28326	Starch granules much broken ; wheat or barley.
Coarsely granular ; sweetish tasted ; brown coloured.	13.12	7.00	0.76	12.20	30.20	1.80	1.60	33.32	28329	Wheat or barley ; pro- bably a mixture of both.

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RESULTS OF AN INSPECTION OF A COLLECTION
DISTRICT OF PRINCE EDWARD ISLAND—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 6	Blanco-Cero ..	28331	Sanderson & Co., Charlottetown.	3 " ..	45	C. F. Blanke & Co., St. Louis, Mo.	Blanco Cero, cooked and ready to serve; scientifically prepared from whole grain.'

DISTRICT OF NEW BRUNSWICK—

Nov. 15	Gusto	24290	Hall & Fairweather, 719 Ward St., St. John, N.B.	3 pkgs	25	The Hogo Mills, Buf-falo, N.Y.	Labelled 'Gusto; ready for the table. Crisp, delicious wheat food.'
" 16	Malta Vita...	24291	The Two Barker's, Ltd., 500 Princess St., St. John, N.B.	3 " ..	30	Malta Vita Pure Food Co., Battle Creek, Mich.	Labelled 'the perfect food; guaranteed absolutely pure concentrated malted food.'
" 17	Shredded WholeWheat	24292	Charles A. Clark, 49 Charlotte St., St. John, N.B.	3 " ..	45	Canadian Shredded Wheat Co., Ltd., Nia-gara Falls, Ont.	Labelled shred-ded wheat. Patented May 27, 1896.
" 19	The King's Food.	24293	W. F. Hatheway Co., Ltd., 17-18 South Wharf, St. John, N.B.	3 " ..	75	The Robert Greig Co., Ltd., Toronto, Ont.	Labelled 'The King's Food. Made in Can-ada. Ideal wheat food, &c
" 20	Orange Meat.	24294	McPherson Bros., 181 Union St., St. John, N.B.	3 " ..	45	The Frontenac Cereal Co., Ltd., Kingston, Ont.	Labelled 'Orange Meat; made in Canada; re-quires no cook-ing; ready to serve.'
" 20	Gritz	24295	W. F. Hatheway Co., Ltd., 17-18 South Wharf, St. John, N.B.	3 " ..	35	Vendors.	Trade mark 'Gritz.' This article of food is ahead of oat-meal.

DISTRICT OF QUEBEC—

Nov. 12	BreakfastFood	26043	François Bourrett, 143 St. Paul, Que.	2 lbs.	15	N. Rioux et Cie.....	
" 12	"	26046	Ozias Lacroix, 19 St. Joseph, Que.	2 "	15	Thomas Davidson,Que	
" 13	"	26054	L. N. Bergeron, 20 Couronne St., Que.	1 "	30	Not known	

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OF SAMPLES OF BREAKFAST FOODS—*Continued.*

T. MOORE, INSPECTOR—*Continued.*

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst (Microscopical Exami- nation).
	Total Proteids N x 6.25.	Moisture.	Petrolie Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
Contents of 1 package weigh 1 lb.	15.75	8.44	0.80	2.68	10.48	3.30	2.84	55.71	28331	Wheat starch.

J. C. FERGUSON, INSPECTOR.

Contents of package weigh 19 ounces.	12.93	6.80	1.36	3.36	8.40	3.50	1.80	61.85	24290	Wheat starch.
Contents of package weigh 12½ oz.	12.25	5.75	1.20	4.20	11.68	2.60	2.28	60.04	24291	Starch granules much broken; wheat or barley.
Food in 1 package weighs 13½ oz.	12.68	8.00	1.20	0.00	7.08	2.70	1.80	66.54	24292	Wheat starch.
Rolled; made from selected Canadian wheat. 1 package contains 3 lbs. 6 oz.	13.12	8.00	1.00	3.32	5.44	1.80	1.98	65.34	24293	"
One package contains 19 oz.	11.87	9.76	0.56	2.08	9.92	2.90	1.36	61.55	24294	Apparently wheat starch granules; much broken.
.....	14.68	9.84	1.96	3.36	3.76	1.25	1.52	63.63	24295	Wheat starch; pos- sibly barley.

E. BELAND, INSPECTOR.

Fine grained but not so fine as flour; some grains yellow- ish coloured.	13.81	9.68	0.72	1.60	4.72	1.59	1.30	66.67	26043	Wheat starch; possibly barley.
In flakes.....	12.94	9.32	0.84	2.24	4.36	1.85	1.44	67.01	26046	" "
Rolled....	12.85	9.40	0.76	1.44	3.96	2.20	1.60	67.79	26054	" "

7-8 EDWARD VII., A. 1908

RESULTS OF AN INSPECTION OF A COLLECTION
DISTRICT OF QUEBEC—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 14	Force.....	26055	George Larochel, 64 du Pont St., Que.	2 lbs.	15	Turcotte et frère, Que.	.....
" 14	Gusto	26056	" "	2 "	15	" "	.....
" 14	Orange Meat..	26057	" "	2 "	15	" "	.....
" 14	Malta Vita ...	26058	" "	2 "	15	" "	.....
" 14	Quaker Oats..	26059	" "	2 "	10	" "	.....
" 14	Saxon Oats...	26060	" "	2 "	15	" "	.....
" 14	Gusto	26061	H. St. Cyr, 95 du Pont St., Que.	2 "	15	Whitehead & Turner, Que.	.....
" 14	Quaker Oats..	26062	" "	2 "	10	" "	.....
" 14	Pilson's Oats..	26063	" "	2 "	25	" "	.....

DISTRICT OF ST. HYACINTHE—

Nov. 7	Orange Meat.	575	Godreau & Stebens, St. Jean, Que.	1 lb.	15	Frontenac Cereal Co., Kingston, Ont.	Marked as "Scientifically prepared. Every particle is perfectly cooked and easily digested."
" 8	Gusto	576	H. Paré, Granby, Que.	1 "	10	The Hoco Mills, Buffalo, N. Y.	Called "Crisp delicious food."
" 8	Vim... ..	577	J. A. Menard, Farnham, Que.	13 ozs.	10	Malta Vita Pure Food Co., Toronto, Ont.	Marked "The good food; whole wheat, cooked and baked; ready to serve with hot or cold milk."
" 9	Cream of Wheat.	578	A. H. Moore, Magog, Que.	29 "	20	Cream of Wheat Co., Minneapolis, Minn.	It is stated that "Cream of Wheat is not only one of the most delicate and delicious breakfast foods but in addition contains a very large percentage of gluten."

SESSIONAL PAPER No. 14
OF SAMPLES OF BREAKFAST FOODS—Continued.
E. BELAND, INSPECTOR—Continued.

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Microscopical Examination).
	Total Protein, N. 6.25.	Moisture.	Petrole- Ether Extract (Fat).	Alcohol Extract, (Sugars, &c.)	Water Extract, (Dextrines).	Crude Fibre.	Total Ash.	Starch, approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
In flakes.....	13.43	8.40	1.40	2.72	10.24	2.70	1.64	59.47	26055	Apparently wheat starch; granules much broken.
.....	12.94	8.16	1.80	3.16	7.36	1.80	1.80	62.98	26056	.....
.....	12.50	8.12	0.60	3.00	11.88	2.30	1.92	59.68	26057	Starch granules much broken; apparently wheat starch.
.....	13.12	7.08	0.88	2.80	11.40	2.45	2.12	60.15	26058	Starch granules much broken; wheat or barley.
Flaked or rolled....	16.18	7.88	4.84	3.48	4.70	1.85	1.68	59.39	26059	Starch, oat.
.....	16.18	8.04	4.32	3.20	5.00	2.90	1.82	58.54	26060	Oat starch.
In flakes.....	12.93	8.56	1.60	0.92	11.36	2.00	1.60	61.03	26061	Starch granules much broken; probably wheat starch.
Rolled or flaked.....	16.18	8.04	4.76	3.60	4.80	2.30	1.56	58.76	26062	Oat starch.
.....	16.00	7.60	5.72	3.28	4.52	1.85	1.72	59.31	26063	.....

J. C. ROULEAU, INSPECTOR.

.....	13.56	8.96	0.32	2.76	11.80	2.80	1.80	58.00	575	Starch granules much broken; apparently wheat starch
.....	11.37	8.92	1.44	1.28	10.52	2.40	1.22	62.85	576	Starch granules much broken; probably wheat starch.
In flakes.	11.87	9.04	0.56	3.12	10.56	2.30	1.52	61.03	577	Starch granules much broken; apparently wheat starch.
Finely granular, yellowish coloured.	12.25	9.84	0.00	0.00	6.44	0.40	0.60	70.47	578	Wheat starch.

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RESULTS OF AN INSPECTION OF A COLLECTION
DISTRICT OF ST. HYACINTHE

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 9	King's Food..	579	L. H. Olivier, Sherbrooke, Que.	23 1/4 lbs.	25	The Robert Greig Co., Ltd., Toronto.	Labelled as "The ideal wheat food. Choicest product from carefully selected Canadian wheat."
	9 Malt Breakfast Food.	580	F. A. Bourque et Cie, Sherbrooke, Que.	2 pkgs.	30	The Malted Cereal Co., Burlington, Vt.	Called "The original and standard malt wheat cereal."
	14 Blanco Cero..	571	A. Lamothe, St. Ours, Que.	17 ozs.	10	C. F. Blanke & Co., St. Louis.	
	15 Petit John's Breakfast Food.	581	O. Lambert, Iberville, Que.	30 "	15	The American Cereal Co., Chicago, Ill.	
	17 Egg-O-See....	582	Thos. Hébert, St. Hyacinthe, Que.	13 "	13	Battle Creek Breakfast Food Co., Quincy, Ill.	
	17 Malta Vita...	591	E. Benoit, St. Hyacinthe, Que.	14 "	10	Malta Vita Pure Food Co., Battle Creek, Mich.	

DISTRICT OF MONTREAL--

Nov. 7	Vim.....	31613	The S. Carsley Co., Ltd., Montreal.	2 pkgs..	20	Malta Vita Pure Food Co.	Each package weighed 14 oz. "Toasted wheat."
" 7	Orange Meat .	31614	" "	1 " ..	15	Frontenac Cereal Co., Kingston, Ont.	Package weighed 1 1/4 lbs.
" 7	Canada Flakes	31615	" "	1 " ..	15	Peterboro' Cereal Co., Peterboro', Ont.	Package weighed 1 1/4 lbs., made from Manitoba wheat.
" 7	Swiss Food...	31616	" "	1 " ..	15	P. McIntosh & Son, Toronto.	Package weighed 2 lbs. 10 ozs.
" 7	Gusto.....	31617	Howe, McIntyre & Co., Youville Place, Montreal.	1 " ..	08	Pawnee Cereal Co., Cedar Rapids, Iowa.	Weight of package 1 lb. A toy for children in each package.
" 7	Malta Vita...	31618	" "	1 " ..	08	Malta Vita Pure Food Co., Battle Creek, Mich.	Weight of package 14 ozs. "Combines the well known food values of wheat and the medicinal values of malt."

SESSIONAL PAPER No. 14

OF SAMPLES OF BREAKFAST FOODS—*Continued.*J. C. ROULEAU, INSPECTOR—*Continued.*

Additional Observations and Quotations from Label.	RES ULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Microscopical Exami- nation).
	Total Proteids N 6.25.	Moisture.	Petrolie Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
.....	12.81	8.88	0.96	1.68	5.92	2.00	1.84	65.91	579	Wheat starch.
Said to be wheat com- bined with Malt- diastase. Recom- mended to "cook thoroughly." One package contains 13 OZS.	14.43	8.08	1.08	6.56	8.72	1.65	1.24	58.24	580	Wheat or barley starch; probably a mixture of both.
.....	16.62	8.12	0.88	3.08	11.68	3.20	2.48	53.94	571	Wheat starch.
.....	12.56	9.76	0.60	0.92	7.32	2.45	1.60	64.79	581	Wheat or barley; prob- ably wheat.
.....	12.06	8.16	0.20	1.92	11.80	2.50	1.82	61.54	582	Starch granules much broken; apparently wheat starch.
.....	13.62	7.60	0.40	3.52	11.92	2.35	1.58	59.01	591	Wheat or barley starch; granules much broken.

J. J. COSTIGAN, INSPECTOR.

Flaked; "whole wheat steamed, cooked and baked." "Ready to serve."	13.56	7.60	0.08	3.96	11.92	2.35	2.00	58.53	31613	Starch granules much broken; apparently wheat starch.
Flaked; requires no cooking. "Ready to serve."	13.62	6.92	0.48	4.20	12.84	2.35	2.00	57.59	31614	" "
May be eaten in any condition.	11.87	7.20	0.20	2.88	11.52	2.25	2.56	61.52	31615	" "
Rolled; "Partly cooked" but never- theless cooking for 10 or 12 minutes re- commended.	13.12	9.20	1.04	2.32	10.50	1.80	1.44	60.58	31616	Wheat starch.
Wheat flakes." "Ready to serve."	13.37	8.56	0.40	2.40	11.20	2.00	1.60	60.47	31617	Starch granules much broken; apparently wheat starch.
Flaked; "Concen- trated, malted thor- oughly, cooked, pre- digested and al- ways ready."	14.00	7.16	0.40	2.64	11.28	2.00	1.60	60.92	31618	Wheat or barley starch

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RESULTS OF AN INSPECTION OF A COLLECTION OF
DISTRICT OF MONTREAL—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 7	Granose Flakes	31619	Howe, McIntyre & Co., Youville Place, Montreal.	1 pkg...	08	Battle Creek Health Food Co.	Canadian Agency, London, Ont. Weight of package 1 lb.
	7 Cream of Wheat.	31620	" "	1 " "	16	Cream of Wheat Co.	Weight of package 2 lbs. "Made from Hard Spring Wheat."
	7 Malt Breakfast Food.	31621	Brouillet & Guay, 77 University St., Montreal.	1 " "	20	Malted Cereal Co., Burlington, Vt.	Weight of package 2 lbs. "The whole being of the finest gluten wheat of the North-west."
	7 Ralston Health Breakfast Food.	31622	" "	1 " "	20	Ralston Purina Co., St. Louis, Mo.	Weight of package 2 lbs.
	7 Force	31623	P. Campbell & Co., 42 Victoria St., Montreal.	1 " "	13	Force Food Co.	Weight 1 lb. A simple preparation of whole wheat and barley malt.
	7 Egg-O-See....	31624	" "	1 " "	13	Manufactured at Quincy, Ill.	Weight 1 lb. A simple preparation of whole wheat and barley malt.

DISTRICT OF OTTAWA—

Nov. 14	Quaker Oats..	29391	George Thomas, 63 George St., Ottawa	3 pkgs., 2 lbs.	30	American Cereal Co., Peterboro', Ont.	Marked ——— "Quaker rolled white oats. Quaker brand. Made in Canada."
	14 Cream of Wheat.	29392	" "	3 " "	60	Cream of Wheat Co., Minneapolis, Minn.	Said to be "made from choicest selected hard spring wheat."
	14 Canada Flakes	29393	" "	3 " "	45	Peterboro' Cereal Co..	Made in Canada from Manitoba wheat.
	14 Egg-O-See....	29394	" "	3 " "	45	Quincy, Illinois, U.S.A.	Said to be "made from choicest wheat."

SESSIONAL PAPER No. 14

SAMPLES OF BREAKFAST FOODS—*Continued.*J. J. COSTIGAN, INSPECTOR—*Continued.*

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Microscopical Exami- nation.)
	Total Proteids N 6.25.	Moisture.	Petrolie Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
"Perfectly cooked; ready to eat at once."	11.00	7.20	0.16	4.56	13.92	2.60	2.28	58.28	31619	Starch granules a broken.
Fine grained; cook- ing recommended.	13.83	9.44	0.32	0.00	7.76	0.50	0.40	67.75	31620	Wheat starch.
"Thoroughly parch- ed and sterilized; then scientifically combined with the natural digestive agent malt dias- tase."	15.31	6.76	0.60	6.72	10.08	1.10	1.24	58.19	31621	Wheat or barley starch; probably a mixture.
.....	15.87	9.52	1.00	2.80	7.17	1.45	1.36	60.83	31622	Wheat starch.
"The work of diges- tion already half done."	13.38	8.00	0.84	2.76	11.68	2.50	2.08	58.76	31623	Starch granules all broken.
Flaked; "Thorough- ly steam cooked. Ready to use."	13.25	7.48	0.52	0.44	14.84	1.90	1.40	60.17	31624	Starch granules much broken; apparently wheat.

A. E. SANDERSON, INSPECTOR.

Cooking recommend- ed. 1 package con- tains 2 lbs.	16.87	7.48	6.16	2.16	6.08	1.70	1.74	57.81	29391	Oat starch.
Cooking required; 1 package contains 28 oz.	14.00	9.52	0.76	0.00	7.20	0.45	0.32	67.75	29392	Wheat starch.
"Elle est toujours préparée et tou- jours délicieuse."	13.12	7.84	0.40	4.36	11.96	2.35	1.80	58.17	29393	Starch granules much broken; apparently wheat.
"Pure healthful syrops are used." 1 package contains 11 ozs.	13.81	6.92	1.44	0.00	12.80	2.15	2.28	60.60	29394	" "

7-8 EDWARD VII., A. 1908

RESULTS OF AN INSPECTION OF A COLLECTION
DISTRICT OF OTTAWA—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 15	Zest	29400	J. Currell, 86 Queen St. west, Ottawa.	3 pkgs.	30	Quaker Oats Co., Chicago.	Marked, "Ready to eat," and "made of the finest Pacific Coast white wheat" also "thoroughly cooked."
" 19	Beaver Oats..	32301	F.A. Scott, 292 Wellington St., Ottawa	1 " ..	25	P. McIntosh & Son, Toronto.	Beaver rolled oats.
" 19	Quaker Puffed Rice.	32302	" " "	3 " ..	30	American Cereal Co., Chicago.	Quaker puffed rice; a prepared breakfast food.
" 19	Gusto	32303	" " "	3 " ..	45	Pawnee Cereal Co., Cedar Rapids, Iowa, U.S.A.	"Wheat food"..

DISTRICT OF KINGSTON—

Nov. 6	Canada Flakes	31015	James McCulla, Montreal, St., Kingston	6 lbs. . .	45	Peterboro' Cereal Co.	Made from Manitoba wheat.
" 6	Egg-O-See. . . .	31018	P. A. Haffner, Montreal, St., Kingston	6 " ..	45	Manufactured at Quincy, Ill., U.S.A.	Made from choicest wheat.
" 6	Quaker Oats..	31019	Vincent Oakley, Brock St., Kingston.	6 " ..	30	American Cereal Co., Peterboro'.	Rollled white oats.
" 7	Malt Breakfast Food.	31020	Wallbridge & Clarke, Bridge St., Bellville.	6 " ..	60	The Malted Cereal Co., Burlington, Vermont	All the virtues of malt; all the strength of wheat.
" 7	Quaker Corn Meal.	31021	" " "	6 " ..	30	Quaker Oats Co., Chicago.	(Yellow granulated) "It is made only of the crystal part of choice yellow corn."

SESSIONAL PAPER No. 14
OF SAMPLES OF BREAKFAST FOODS—Continued.
A. E SANDERSON, INSPECTOR—Continued.

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.									Remarks by Analyst. (Microscopical Exami- nation).
	Total Proteids N 6.25.	Moisture.	Petroleic Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.	No. of Sample.	
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
1 package contains 7 ozs.	12.75	7.80	0.56	1.40	13.44	3.50	2.10	58.45	29400	Starch granules much broken; apparently wheat or barley.
Cooking recommend- ed.	16.87	6.52	5.64	1.96	5.88	1.95	1.76	59.42	32301	Oat starch.
"The wonderful in- vention of puffing rice cooks the starch granules so thoroughly that Quaker puffed rice is very largely a predigested food." 1 package contains 7 oz.	10.94	7.80	0.12	0.00	22.96	0.70	0.64	56.84	32302	Starch granules very much broken.
"Wheat flakes ready to serve." 1 pack- age contains 17 oz.	13.25	6.56	1.12	3.44	12.00	3.30	2.04	58.29	32303	Starch granules much broken; apparently wheat.

J. HOGAN, INSPECTOR.

"Serve cold or warm." 1 package contains 19½ ozs.	12.56	7.84	1.00	4.32	13.36	2.40	2.56	55.96	31015	Starch granules much broken.
"Good to eat at any time."	12.25	8.04	0.00	2.20	12.48	1.70	1.88	61.45	31018	Starch granules much broken; apparently wheat starch.
.....	13.12	7.60	5.08	3.44	5.48	2.40	1.80	61.08	31019	Oat starch.
.....	14.00	7.60	0.60	6.96	9.44	1.65	0.82	58.93	31020	Wheat or barley starch; probably a mixture.
1 package contains 2 lbs. 15 ozs.	8.12	10.04	0.48	1.60	4.88	1.60	0.20	73.08	31.21	Maize starch.

Analysis:—	
Proteids (brain, nerve and muscle food) ..	11.63
Carbohydrates (heat and flesh producers) ..	77.00
Fat ..	1.75
Lignose and cellulose	0.73
Ash (phosphates, lime, &c.)	1.05
Water ..	7.84

100 00

7-8 EDWARD VII., A. 1908

RESULTS OF AN INSPECTION OF A COLLECTION
DISTRICT OF KINGSTON—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 7	Orange Meat	31022	Wallbridge & Clarke, Bridge St., Belleville.	4 lbs...	45	Frontenac Cereal Co., Kingston.	
" 7	Toasted Corn Flakes.	31023	O. S. Hicks, Front St., Belleville.	1½ " ..	30	W. R. Kellogg, Battle Creek, Mich.	Used and recommended by the Battle Creek Sanitorium.
" 7	Canada Flakes	31024	" " "	4 " ..	45	Peterboro' Cereal Co.	Made from Manitoba wheat.

DISTRICT OF TORONTO—

Nov. 14	Canada Flakes	30220	Peter Anderson, grocer, Guelph.	3 pkgs.	15	Peterboro' Cereal Co.	" From golden grain to package form no human hand touchesCanada Flakes."
" 16	Cook's Flaked Rice.	30229	Michie & Co., Ltd., King st., Toronto.	1 " ..	20	American Rice Food Co., Matawan, N.J.	Made from Louisiana and Texas rice.
" 16	Quaker Puffed Rice.	30230	" " "	1 " ..	10	American Cereal Co., Chicago, U.S.A.	" Only the very best grade of rice is used.
" 21	Hornby's Oat-meal.	30241	" " "	1 " ..	20	Hornby Co., N.Y	.... Process : Drying in fire kilns, impurities removed, steam cooking the kernels for several hours, therby converting the starch into dextrine and drying by superheated air
" 21	Malted Food	30242	" " "	1 " ..	18	Malted Cereal Co., Burlington, Vt.	
" 22	Apitezo . . .	30244	Midland Bros., 128 King st., Toronto.	3 " .. 1 "contains 18 oz.	45	American Cereal Co., Chicago, U.S.	Claimed to be made of "grain combined with vegetable or plant iron."

SESSIONAL PAPER No. 14
OF SAMPLES OF BREAKFAST FOODS—*Continued.*

J. HOGAN, INSPECTOR *Continued.*

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst (Microscopical Exami- nation).
	Total Proteids N. 6.25.	Moisture.	Petrolie Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
"Requires no cook- ing; all ready to eat."	10.94	7.52	0.24	5.60	11.28	2.35	2.28	59.79	31022	Starch granules much broken; probably wheat.
Finely flaked. One package coniains 4½ ozs.	7.88	6.08	0.64	5.00	17.48	2.60	1.16	59.16	31023	Starch granules much broken; apparently maize starch.
"The wheat is thor- oughly washed and scientifically pre- pared by the latest improved machin- ery."	10.06	7.72	1.00	2.68	12.20	2.25	1.96	62.13	31024	Starch granules very much broken; pro- bably wheat.

T. KIDD, ACTING INSPECTOR.

All of the wheat toasted, ready to eat. 1 package con- tains 7 ozs.	13.12	8.56	0.32	2.92	11.40	1.60	1.92	60.16	30220	Starch granules very much broken; pro- bably wheat.
"Don't cook "	11.62	8.84	0.00	0.00	6.24	0.75	0.40	72.15	30229	Starch granules very much broken; pro- bably rice.
"Thoroughly cooked and steralized."	12.37	8.80	0.00	0.00	14.80	0.75	0.20	63.08	30230	"
"Steam cooked," but nevertheless direc- tions given for cooking.	16.62	7.80	6.00	2.20	1.42	2.40	1.40	62.16	30241	Oat starch.
	12.37	7.28	0.52	7.96	9.80	1.20	1.06	59.81	30242	Wheat or barley; pro- bably a mixture.
	15.31	7.84	0.00	13.52	13.44	1.50	2.02	46.37	30244	Starch granules very much broken. The analysis on label can- not be sustained.

Analysis:—	
Fat	0.99
Protein	19.00
Dextrinized carbohydrates and cellulose . . .	54.67
Grape sugar	16.00
Ash	1.67
Moisture	7.77

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RESULTS OF AN INSPECTION OF A COLLECTION OF
DISTRICT OF TORONTO—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov. 22	Norka	30245	Simpson & Co., Ltd., Yonge st., Toronto	1 pkg. contain- ing 10 oz	15	Norka Food Co., Battle Creek, U.S.	Labelled as "Cooked and malted oat food." "The Twentieth Century Food"
" 22	Buckwheat Flour.	30246	" " "	1 " "	10	F. F. Dalley & Co., Hamilton.	"Selfraising Royal Hygien- ic flour."
" 22	Malt Break- fast Food.	30247	" " "	1 " "	15	H. P. Eckart, wholesale grocer, Toronto.	"The choicest whole wheat scientifically combined with the best barley malt."
" 22	Hecker's Far- ina.	30248	T. Eaton & Co., Yonge st., Toronto.	3 " "	30	Hecker, Jones & Jewell Milling Co., N. Y.	Labelled as made from the heart of selected wheat.

DISTRICT OF LONDON—

Nov. 2	Toy Guster...	30196	Thomas Langlois, grocer, Windsor, Ont.	1 " "	10	J. F. Smith, wholesale grocer, London, Ont.	Wheat flakes "For health, strength and good cheer."
" 3	Hecker's Hom- iny.	30199	Hugh Malcomson, grocer, Chatham, Ont.	1 " "	12	Hecker, Jones & Jewell Co., N. Y.	
" 3	Grape Nuts...	30202	Edward O'Flaherty, grocer, Stratford, Ont.	3 " "	45	Postum Cereal Co., Battle Creek, Mich.	Said to be made by special treat- ment of wheat and barley, dex- trose and grape sugar.
" 3	Cereta Wheat Food.	30203	Walsh Bros., grocer, Stratford, Ont.	3 " " 1 " con 21 ozs.	30	Manufacturers of Qua- ker Oats.	Labelled as "milled from the very choice- st part of the wheat."
" 5	Quaker Puffed Rice.	30204	Williams & Purcell, Seaforth, Ont.	3 pkgs..	45	The American Cereal Co., Chicago.	Patented Aug., 1902; Aug. and Sept., 1904.
" 5	Pancake Flour	30205	A. G. Ault, Sea- forth, Ont.	3 " "	45	Davis Milling Co., St. Joseph, U.S.	Labelled "Aunt Jemimas Pan- cake flour for griddle cakes, muffins and gems. Made of wheat, corn and rice."
" 5	Malta Vita...	30206	Henry Levins, Sea- forth, Ont.	3 " "	30	Pure Food Co., Toronto	Labelled "Con- centrated malt- ed food."

SESSIONAL PAPER No. 14
SAMPLES OF BREAKFAST FOODS—Continued.
T. KIDD, ACTING INSPECTOR—Continued.

Additional Observations and Quintations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Microscopical Exami- nation).
	Total Proteids, N. 6.25.	Moisture.	Petroleic Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
'Ready to eat ; heat before serving.'	14.00	6.24	2.16	6.16	13.68	1.00	2.26	54.50	30245	Starch granules very much broken ; The analysis on label cannot be sustained.
'Always ready for immediate use.'	7.31	9.60	0.40	2.56	6.88	1.00	4.28 2.46	67.97	30246	Buckwheat starch.
.....	11.37	7.68	0.08	6.96	9.24	1.50	1.48	61.63	30247	Wheat or barley starch ; probably a mixture.
.....	11.37	9.60	0.00	0.00	4.56	0.50	0.70	73.27	30248	Wheat starch.

T. KIDD, INSPECTOR.

Ready to serve.	10.50	7.96	0.84	2.00	10.72	1.65	1.42	64.91	30196	Starch granules much broken ; probably wheat starch.
Directions given for cooking.	8.75	10.00	0.84	0.80	5.00	1.00	0.20	73.41	30199	Maize starch.
"Don't try to cook this food. It is per- fectly cooked at the factory. Serve dry just as it comes from the package."	10.94	4.72	0.40	14.96	31.84	1.70	1.06	34.38	30202	Starch granules very much broken.
Directions given for cooking.	10.50	9.44	0.36	0.00	5.48	1.05	0.46	72.71	30203	Wheat starch.
.....	11.35	9.20	0.00	0.00	17.12	0.60	0.40	61.33	30204	Starch granules much broken ; probably rice.
"Always ready for the table, no yeast, no salt."	10.50	8.56	0.16	1.00	7.28	2.40	3.20	63.90	30205	Starch granules ; ap- parently wheat, maize and rice.
"Ready to eat ; thin- noughly cooked, pre- digested."	11.81	8.52	0.88	3.08	12.84	2.00	1.76	59.11	30206	Starch granules much broken ; apparently wheat or barley.

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RESULTS OF AN INSPECTION OF A COLLECTION OF
DISTRICT OF LONDON—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
Nov 6	Force	30207	Charles Andrew, Seaforth, Ont.	1 pkgs..	15	Force Food Co., Buffalo, N.Y.	Labelled "The natural food for creating power, repairing waste, maintaining energy."

DISTRICT OF MANITOBA—

Nov. 8	Malta Vita...	25911	Coates & Co., Brandon, Man.	1 lb ...	15	Malta Vita Pure Food Co., Battle Creek, Mich.	In bulk....
" 12	Quaker Oats..	25915	A. Hendry, Winnipeg, Man.	2 " ..	15	The American Cereal Co., Peterboro', Ont.	" ..
" 12	Puffed Rice...	25916	Sutherland Bros " .	1 " ..	15	The American Cereal Co., Chicago.	" ...
" 12	Canada Flakes	25917	Gillies & Frances " .	1 " ..	10	Peterboro' Cereal Co., Peterboro', Ont.	" ...
" 16	Petit John's Breakfast Food.	25918	Kennedy & Seeney, Winnipeg, Man.	1 " ..	20	The American Cereal Co., Chicago.	" ...
" 16	Grape Nut . .	25919	D. A. Ritchie " .	1 " ..	15	Postum Cereal Co., Battle Creek, Mich.	" ...
" 16	Malt Food....	25920	J. A. McKerchar, Winnipeg, Man.	1 " ..	15	Malted Cereal Co., Montreal.	" .
" 9	Puffed Rice...	25914	C. S. B. Burley, Portage la Prairie.	1 " ..	15	The American Cereal Co., Chicago.	" ...

DISTRICT OF BRITISH COLUMBIA

Nov. 14	Force	32009	E. H. McMillan, Granville St., Vancouver, B.C.	3 pkgs..	45	The Force Food Co., Buffalo, N.Y., U.S. A.	It is stated that in "Force, the whole of the wheat is scientifically combined with barley malt."
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SESSIONAL PAPER No. 14

SAMPLES OF BREAKFAST FOODS —*Concluded.*

T. KIDD, INSPECTOR—*Continued.*

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Microscopical Ex- amination).
	Total Proteids N . 6.25.	Moisture.	Petroleic Ether Extract (Fat).	Alcohol Extract (Sugars &c.)	Water Extract. (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.		
"Serve cold; no cook- ing required; toast before serving, no sugar required."	10.94	8.44	0.96	0.84	11.64	2.48	1.52	63.18	30207	Starch granules much broken; apparently wheat.

W. M. CONKLIN, INSPECTOR.

.....	10.50	7.44	0.00	1.80	14.40	1.65	1.62	62.59	25911	Starch granules very much broken.
.....	14.00	7.65	5.20	1.80	5.16	1.95	1.28	62.96	25915	Oat starch.
.....	8.31	8.24	0.00	0.00	20.80	0.75	1.00	60.90	25916	Starch granules all broken.
.....	11.37	7.04	0.32	1.92	13.44	1.70	2.00	62.41	25917	Starch granules very much broken.
.....	9.62	7.68	0.48	2.40	7.72	1.25	1.42	59.43	25918	Wheat or barley starch; probably wheat.
.....	11.73	5.76	0.40	16.48	27.76	0.85	1.26	35.76	25919	Starch granules much broken.
.....	11.73	7.24	0.00	8.08	8.72	0.50	1.64	62.09	25920	Wheat or barley; pro- bably a mixture of both.
.....	8.75	8.02	0.12	0.00	16.04	1.45	0.84	64.78	25914	Starch granules much broken; a few gran- ules characteristic of rice.

—E. B. PARKINSON, INSPECTOR.

"Force is food with the indigestible parts left out." "The comparative digestibility with other foods is Force 15 to 30 mins., oats, rolled 30 to 60 mins., wheat, roll- ed 1 to 3 hrs., hom- iny (gran.) 1 to 3 hrs."	11.37	8.48	0.48	3.72	11.28	1.60	2.08	60.99	32009	Starch granules much broken.
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7-8 EDWARD VII., A. 1908

RESULTS OF AN INSPECTION OF A COLLECTION
DISTRICT OF BRITISH COLUMBIA

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.	From Inspector's Report.
				Quantity.	Cents.		
1906.							
	9 Malta Ceres...	28188	W. H. Walsh, Seymour St., Vancouver, B.C.	3 pkgs..	15	The Twin City Nut Food Co., Minneapolis, St. Paul, Minnesota, U.S.A.	This is said to be "a scientific combination of thoroughly malted and cooked cereals."
	9 Orange Meat..	28189	Webster Bros., Granville St., Vancouver, B.C.	3 " "	40	The Frontenac Cereal Co., Ltd., Kingston, Ont.	It is stated that "Orange Meat is scientifically prepared, thoroughly cooked and absolutely digestible."
	10 Grape Nuts...	28190	S. F. McCready, Granville St., Vancouver, B.C.	3 " "	45	The Postum Cereal Co., Ltd., Battle Creek, Mich., U.S.	This is said to be fully cooked, pre-digested dextrose and grape sugar, made by special treatment of entire wheat and barley."
	10 Breakfast Food	28191	John G. Kirkwood, Granville St., Vancouver, B.C.	3 " "	15	The Lake of the Woods Milling Co., Kewatin	
	10 Farina . . .	28193	Hudson's Bay Co., retail, Granville St., Vancouver, B.C.	3 " "	40	Sperry Flour Co., 114, 116 Sacramento St., San Francisco.	Stated to be particularly adapted for children."
	12 Malted Cereal.	28195	Kelly, Douglas Co., Ltd., Water St., Vancouver, B.C.	3 " "	45	Portland Sanitarium Food Co., Portland, Oregon.	It is stated that this food "is subjected to a high degree of heat, and contains elements which produce a natural pre-digested food."
	12 Breakfast Food	28196	The W. H. Malkin Co., Ltd., Water St. Vancouver, B.C.	3 " "	55	Acme Mills Co., Portland, Oregon, for Purina Mills, St. Louis, Mo.	"Made from selected wheat, rich in gluten."

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OF SAMPLES OF BREAKFAST FOODS—*Continued.*—E. B. PARKINSON, INSPECTOR—*Continued.*

Additional Observations and Quotations from Label.	RESULTS OF ANALYSIS.								No. of Sample.	Remarks by Analyst. (Micro- scopical Exami- nations.)
	Total Proteids N = 6.25.	Moisture.	Petrole Ether Extract (Fat).	Alcohol Extract. (Sugars, &c.)	Water Extract (Dextrines).	Crude Fibre.	Total Ash.	Starch approxi- mately by dif- ference.		
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
Labelled "Do not cook."	14.00	7.44	0.24	6.48	18.72	0.80	1.30	51.02	28188	Starch granules much broken.
'Requires no cook- ing all ready to eat.'	11.37	8.00	0.28	7.04	12.16	1.50	1.80	57.85	28189	Starch granules much broken; apparently wheat starch.
'The system will ab- sorb a greater amount of nourish- ment from 1 lb. grape nuts than from 10 lbs meat, wheat, oats or bread.'	11.67	5.00	0.00	15.68	27.84	1.00	1.42	37.39	28190	Starch granules much broken.
.....	11.06	9.84	0.00	0.16	5.56	0.60	1.08	71.70	28191	Wheat starch.
Directions given for cooking.	8.31	9.00	0.00	0.00	6.40	1.15	0.68	74.46	28193	Wheat starch.
It is so perfectly pre- pared that it needs no further cooking and can be eaten dry.	9.17	6.72	0.64	10.40	20.00	0.35	1.00	51.72	28195	Wheat or barley.
Directions given for cooking.	13.25	9.44	0.00	2.40	6.00	1.25	1.28	66.38	28196	Wheat starch.

APPENDIX I.

BULLETIN No. 133—BUTTER, 1907.

OTTAWA, April 16, 1907.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—On the 30th January last I had the honour of reporting to you the results of analysing 101 samples of butter collected in 1906 (Bulletin No. 131) and of pointing out that two of these consisted almost exclusively of foreign fat and that apparently attempts were being made either to manufacture or to import into Canada oleomargarine, in contravention of the provisions of the Butter Act, 1903. On account of the small number of these adulterated samples compared with those found genuine (about 1 in 50) and the uselessness of expending analytical work upon the unadulterated samples the suggestion was made by Mr. A. McGill, Assistant Analyst to the Chief Analyst, that a larger number of butter samples should be collected, but that the fats from these should first be tested as to their refractive index, and only those butters subjected to further examination which gave unsatisfactory results in this particular. This plan appeared to me to have great advantages and after it had obtained your approval, orders were issued to collect samples in all the food inspection districts of the Dominion, the total number asked for being 1,000. As the examination progressed however it was found that the sophisticated samples came exclusively from the Province of Quebec, and therefore the orders for some of the Western inspection districts were cancelled before the full number first required had been obtained. The number collected and subjected to examination under the Refractometer, and the results of this examination are shown in the following statement :—

Name of District.	Genuine.	Doubtful.	Containing Foreign fat.	Total Number collected.
Nova Scotia	50	0	0	50
Prince Edward Island	50	0	0	50
New Brunswick	50	0	0	50
Quebec	106	0	6	112
St. Hyacinthe	150	0	0	150
Montreal	198	0	2	200
Ottawa	49	1	0	50
Kingston	46	4	0	50
Toronto	100	0	0	100
London	50	0	0	50
Manitoba	7	0	0	7
British Columbia	12	0	0	12
	868	5	8	881

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The samples thus found to be adulterated with foreign fat from mere testing by the Butyro-refractometer were the following:—

Date of Collection.	No. of Sample.	Name and Address of Vendor.	Name of Furnisher as given by Vendor.	Reading of Butyro-refractometer at 25° C. by A. McGill and Miss E. Davidson.
1907.				
Jan. 15	26098	Elz. Couture, 124 Caron St., Quebec.	Emond & Cote, Quebec.	58°3'-58°8'.
" 17	26105	L. Letourneau, 33 Smith St., Quebec.	Oct. Jacques & Cie, Quebec.	57°5'-57°6'.
" 25	26151	F. Delisle, 131 Hermine St., Quebec.	Emond & Cote, Quebec.	57°5'.
" 25	26152	Dame N. L. Pouliot, 96 Kirouack St., Quebec.	" "	57°8'.
" 29	26157	F. E. Jobin, 1168 St. Valier St., Quebec.	Not known.	57°0'.
" 30	26166	F. Hebert, 191 St. Germain St., Quebec.	Emond & Cote, Quebec.	57°5'.
" 9	31732	H. Delorme, 253 Gain St., Montreal.	Not known.	57°8'-58°0'.
" 15	31866	G. Bertrand, 1742 St. Catherine W. East, Montreal.	Champagne, Montreal.	57°3'.

These eight samples were then submitted to the District analyst, Dr. J. T. Donald, Montreal, for further examination along with two of the doubtful ones, namely No. 26176 the refractive index of which was 54° and No. 31721 whose index of 48°-49° had been found exceptionally low. The readings in the case of the genuine samples at 25°C. were mostly about 52°, ranging from 49·5° to 53·3°. The analyses by Dr. Donald resulted as follows:—

No. of Sample.	Vendor.	Moisture.	Fat.	Salt.	Curd.	Reichert Meissl Value.	Specific Gravity of fat at 100 C.	Opinion.
		p. c.	p. c.	p. c.	p. c.	No.		
26098	E. Couture.	6·06	90·03	1·92	1·41	1·6	903·8	Adulterated, containing little if any butter fat.
26105	L. Letourneau.	8·32	85·81	3·44	1·60	1·4	895·6	"
26151	F. Delisle.	5·67	87·19	4·75	1·55	1·3	899·2	"
26152	Dame Pouliot.	7·11	88·94	2·61	0·53	1·5	898·4	"
26157	F. E. Jobin.	5·55	89·38	2·64	1·64	1·2	914·0	"
26166	F. Hebert.	5·83	89·00	3·08	1·19	1·2	900·0	"
26176	H. Lapointe.	14·19	73·09	10·77	0·99	25·5	904·6	Genuine but High in salt.
31731	L. Allaire.	10·55	86·15	2·21	1·08	27·6	907·7	Genuine.
31732	H. Delorme.	5·80	90·05	2·22	1·39	2·0	900·0	Adulterated, containing little if any butter fat.
31866	G. Bertrand.	4·90	92·89	1·96	0·24	2·5	896·9	"

I have the honour to be, sir,
Your obedient servant,
THOMAS MACFARLANE,
Chief Analyst.

APPENDIX J.

BULLETIN No. 134—STANDARD FERTILIZERS, 1907.

OTTAWA, May 10, 1907.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I have the honour to report that up to this date 176 samples of standard fertilizers have been received by this Branch from their manufacturers who propose to offer them for sale in the markets of the Dominion during the year 1907. The Fertilizers Act, 1890, requires that such samples shall be transmitted to the Minister of Inland Revenue ‘before the end of the month of January in each year,’ but, to suit the convenience of the manufacturers, this time has been gradually extended until samples are accepted which come as late as the end of April. *The number of samples above mentioned exceeds that of last year, and is greatly above the average as will be seen from the following statement :—

In 1897 there were analysed 107 standard samples.			
1898	“	124	“
1899	“	154	“
1900	“	107	“
1901	“	102	“
1902	“	106	“
1903	“	128	“
1904	“	111	“
1905	“	120	“
1906	“	153	“
1907	“	176	“

The tabulated description appended to this report contains the designation of the various brands of fertilizers offered for sale in 1907, the names of the manufacturers or importers, the claims made as regards their fertilizing constituents, and the actual percentages of the latter found in the standard samples on analysis in this laboratory. The ‘guaranteed contents’ must be understood to indicate only the lowest percentages claimed on the manufacturers label or given in correspondence with the Department.

As required by the Fertilizers Act, the tabulated statement contains also a column in which the relative value per 2,000 lbs. of each fertilizer is given, calculated from their contents in fertilizing ingredients. the value of these being taken as follows :—

	Cents per lb.
Nitrogen, in salts of ammonia, or nitrates, as well as in compound fertilizers.....	17
Organic nitrogen, in ground bone, fish, blood or tankage.....	16
Phosphoric acid—	
Soluble in water.....	6
Soluble in 1 per cent citric acid solution.....	5½
Insoluble in Thomas phosphate powder, bone and fertilizers generally.....	1½
Potash, in compound fertilizers.....	5

* Indeed ten samples from British Columbia did not arrive till much later.

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These rates are essentially the same as those of 1905 which were then modified in order to bring them into closer agreement with the market prices of the materials used in the manufacture of fertilizers. The value of each brand is calculated on the results of the analysis of the standard samples, but it has been omitted in the case of the guaranteed contents of those samples regarding which the analysis or information supplied has not been sufficiently explicit. It has also been considered reasonable to expunge from the foregoing list of values the rate formerly given for insoluble phosphoric acid in Thomas phosphate powder or basic slag, because its agricultural effect cannot be considered as higher than that of the insoluble phosphoric acid in bone.

From studying the present tabulated statement it would appear that the number of fertilizers of low price is on the increase, and that it is necessary to call the attention of purchasers to the consideration that the fertilizing constituents in these are likely to cost more than in fertilizers of a higher grade. The expense of mixing a ton of fertilizer containing say 300 lbs. of plant food is as great as in the case of one twice as rich in fertilizing constituents. The cost of package, carting and freight is the same per ton. It is evident, therefore, that the manufacturer is in a position to sell the plant food of high grade fertilizers at cheaper rates per pound than in brands of low grade. In other words, the higher the grade the cheaper can the fertilizing constituents be bought. Farmers should therefore consider the advantage of purchasing only high grade fertilizers. He should also be advised to avoid those brands which have less than two per cent of ammonia or potash. These percentages are too low in cases where such ingredients are required, and where they are not needed is useless to apply them. It is a waste of money to buy nitrogen or potash in fertilizers containing less than one per cent of these constituents.

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE.

Chief Analyst.

NOTE.

LABORATORY OF THE INLAND REVENUE DEPARTMENT,

317 QUEEN STREET,

OTTAWA, June 19, 1907.

Owing to the lamented death of Mr. Macfarlane, the final revision of this Bulletin has been made by me.

It may be necessary to explain that in calculating the relative values, I have taken the minimum percentages of fertilising materials claimed by the manufacturers, as the basis of calculation. In cases where no differentiation of the phosphoric acid is given, it is impossible, of course, to calculate the value with any reasonable degree of accuracy. Where available phosphoric is not distinguished as water soluble, the whole available acid has been given value as 'reverted,' i.e. $5\frac{1}{2}$ cents per lb.

A. MCGILL,

Acting Chief Analyst.

TABULATED DESCRIPTION OF 173 STANDARD SAMPLES

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials Produced.
1906.					
May 23 1876	Bone Meal.. . . .	The Chas. H. Lilly Co., Seattle.	Wm. Rennie Co., Ltd., Vancouver Branch.		
22 1877	Lawn Fertilizer No. 5	Portland Seed Co., Portland, Oregon.	Charles Nelson, Vancouver, B.C.		
" 21 1878	Read's Practical Potato Special.	American Agricultural Chemical Co., Boston Sales Dept., 92 State St.	Manufacturers.. . .		Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, nitrate of soda, or sulphate of ammonia, sulphate or muriate of potash, sulphuric acid.
" 21 1879	Read's Vegetable and Vine.	" " . . .	" " . . .		" " . . .
" 21 1880	Read's Potato Manure	" " . . .	" " . . .		" " . . .
" 21 1881	Read's High Grade Farmer's Friend.	" " . . .	" " . . .		" " . . .
July 3 1882	Bone Meal.. . . .	The Chas. H. Lilly Co., Seattle.	Imported by M. J. Henry, Vancouver, B.C.		
" 6 1883	Fine Bone Fertilizer.	P. Burns & Co., Vancouver, B.C.	Manufacturers.. . .		
Sept. 1 1884	Fish Guano.....	Fraser River Oil and Guano Co.	J. F. E. Kinnell....		Fraser river salmon refuse..
Oct. 22 1885	Campbell's Fertilizer No. 1.	The Executors of Robt. Campbell, Manchester, Eng.	Blackie Bros., 44 Allen St., Halifax, N.S.		
" 22 1886	Campbell's Fertilizer No. 2.	" " . . .	" " . . .		
1907.					
Jan. 9 1887	International Grain and Grass Fertilizer	International Seed Co., Rochester, N.Y.	A. E. Howe, Sec'y..		
" 9 1888	International Potato and Truck Manure.	" " . . .	" " . . .		
" 11 1889	Fertilizer "A".....	Davies Packing Co., Ltd., Harriston, Ont.	Manufacturers.		Blood, bone and dried albuminous matter.
" 12 1890	Toronto "A". . . .	Wm. Davies Co., Ltd., Toronto.	" " . . .		Dried blood, bones and tankage.
" 12 1891	Toronto "B".....	" " . . .	" " . . .		Concentrated extract obtained from the evaporation of tank liquors.
" 15 1892	Essex "A1" Superphosphate.	Russia Cement Company, Manufacturers of Essex High Grade Fertilizers, Gloucester, Mass.	S. C. Shaffner, Granville, Ferry, N.S.		High grade muriate of potash, and sulphate of potash, nitrate of soda, dry ground blood, dry ground fish, fine bone meal and acid phosphate.
" 15 1893	Essex XXX Fish and Potash.	" " . . .	" " . . .		" " . . .
" 15 1894	Essex Market Garden and Potato Manure	" " . . .	" " . . .		" " . . .
" 15 1895	Essex Orchard Fertilizer.	" " . . .	" " . . .		" " . . .

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OF AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907.

RESULTS OF ANALYSIS.													Name of Analyst.
	Nitrogen.		Phosphoric Acid.							Relative Value per ton of 2,000 lbs.	Number of Sample.		
	Total, including that of nitric acid and ammonia if present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.				
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	Scts.			
Guaranteed contents.	3.83	4.65	1.20	9.97	4.15	15.32	11.17	0.05	.....	25.93		
Standard sample..	3.63	4.40	.....	20.47	6.55	27.02	20.47	0.00	6.86	36.11	1876	Miss E. Davidson
Guaranteed contents.	2.89	3.51	.....	.....	4.72	12.12	7.40	6.37	.....	25.75		
Standard sample..	4.02	4.88	1.12	15.36	5.43	21.91	16.48	0.19	5.36	33.73	1877	" "	
Guaranteed contents.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	1.44	1.75	6.24	2.07	2.56	10.87	8.31	8.24	9.64	23.68	1878	" "	
Guaranteed contents.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	2.41	2.92	8.63	2.24	2.56	13.43	10.87	7.68	12.22	29.46	1879	" "	
Guaranteed contents.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	2.38	2.89	6.40	2.88	2.39	11.67	9.28	11.62	9.22	31.28	1880	" "	
Guaranteed contents.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	3.28	3.98	4.80	3.04	3.51	11.35	7.84	10.61	10.64	31.91	1881	" "	
Guaranteed contents.	3.83	4.65	1.20	10.97	4.15	15.32	11.17	0.05	.....	27.82		
Standard sample..	2.16	2.62	0.80	6.08	5.11	11.99	6.88	1.02	3.90	17.11	1882	" "	
Guaranteed contents.	3.05	3.70	.....	.....	.....	29.00	.....	.....	3.00	.....		
Standard sample..	3.71	4.50	0.96	10.72	10.39	22.07	11.68	0.48	7.00	28.41	1883	" "	
Guaranteed contents.	8.34	10.13	.....	.....	.....	6.55	.....	.....	6.32	.....		
Standard sample	7.71	9.36	0.80	0.97	5.75	7.52	1.77	0.96	8.40	29.37	1884	" "	
Guaranteed contents.	4.73	5.75	3.44	.....	3.44	.....	.....	3.10	.....	23.39		
Standard sample..	4.03	4.91	3.67	2.57	2.24	8.48	6.24	3.13	17.70	23.93	1885	Miss S. E. Wright	
Guaranteed contents.	3.53	4.17	5.95	.....	.....	.....	.....	4.32	.....	23.46		
Standard sample..	3.82	4.64	6.72	1.60	1.60	9.92	8.32	5.60	12.90	28.89	1886	" "	
Guaranteed contents.	1.25	1.50	8.00	2.00	1.00	11.00	10.00	2.50	.....	18.85		
Standard sample..	1.54	1.87	7.22	2.62	5.31	15.15	9.84	4.09	14.20	22.46	1887	A. Lemoine.	
Guaranteed contents.	1.25	1.50	6.00	2.00	1.00	9.00	8.00	7.00	.....	20.95		
Standard sample..	1.68	2.04	6.71	1.21	4.03	11.95	7.92	9.17	13.10	25.47	1888	" "	
Guaranteed contents.	6.46	7.85	.....	.....	.....	17.57	.....	.....	2.90	.....		
Standard sample..	6.44	7.82	2.75	14.40	3.19	20.34	17.15	.....	3.90	40.71	1889	" "
Guaranteed contents.	8.00	6.59	.....	.....	.....	17.27	.....	.....	8.85	.....		
Standard sample..	6.44	7.82	2.75	14.53	3.19	20.47	17.28	1.58	8.30	42.42	1890	" "	
Guaranteed contents.	13.17	16.00	.....	.....	.....	.....	.....	.....	7.20	42.14		
Standard sample..	13.04	15.84	.....	1.15	1.28	2.43	1.15	3.12	7.60	46.49	1891	" "
Guaranteed contents.	1.00	1.20	3.00	4.00	2.00	9.00	.....	2.00	.....	14.00		
Standard sample..	1.40	1.70	3.19	4.47	7.50	15.16	7.66	2.58	6.20	18.34	1892	" "	
Guaranteed contents.	2.06	2.50	.....	.....	.....	12.00	9.00	2.25	.....	20.05		
Standard sample..	2.14	2.60	5.75	5.60	3.04	14.39	11.35	2.95	8.87	24.20	1893	Miss S. E. Wright	
Guaranteed contents.	2.00	2.40	4.00	4.00	2.00	10.00	.....	5.00	.....	21.60		
Standard sample..	2.18	2.65	5.28	4.48	3.83	13.59	9.76	6.00	9.90	25.83	1894	" "	
Guaranteed contents.	1.64	2.00	4.00	3.00	2.00	9.00	8.50	22.78			
Standard sample..	1.86	2.26	4.15	3.21	4.79	12.15	7.36	9.65	5.12	25.92	1895	" "	

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TABULATED DESCRIPTION OF 173 STANDARD SAMPLES

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials produced.
1907.					
Jan. 15 1896	Essex	Complete Manure for Corn, Grain and Grass.	Russia Cement Co., Manufacturers of Essex High Grade Fertilizers, Gloucester Mass.	S. C. Shaffner, Granville, Ferry, N.S.	High grade muriate of potash and sulphate of potash, nitrate of soda, dry ground blood, dry ground fish, fine bone meal and acid phosphate.
" 15 1897	Essex	Complete Manure for Potato, Roots or Vegetable	" " "	" " "	" " "
" 15 1898	Essex	Fish Bone Meal.	" " "	" " "	" " "
" 21 1899	Fertilizer	"E".....	The Harris Abattoir Co., Ltd., Toronto, Canada.	Manufacturers	Dried blood, bones and tankage.
" 4 1900	Great Eastern North-	ern Corn Special.	The American Agricultural Chemical Co., Rutland, Vermont, U. S. A. (branch.)	"	"
" 4 1901	Great Eastern Potato	Manure.	" "	"	"
" 4 1902	Great Eastern Gen-	eral.	" "	"	"
" 4 1903	Great Eastern Grass	and Oats.	" "	"	"
" 4 1904	Great Eastern High	Grade Potato Ma-	" "	"	"
" 4 1905	Great Eastern Potato	Special.	" "	"	"
" 4 1906	A. A. C. Co. Aroo-	stook Complete	" "	"	"
" 4 1907	A. A. C. Co. Aroo-	stook High Grade	" "	"	"
" 12 1908	Tankage Fertilizer..		The Laing Packing and Provision Co., Ltd., Montreal.	"	"
" 12 1909	Dried Blood..		" "	"	"
" 31 1910	Corn Fertilizer. .		Chevalier and Roy, Youville, Quebec.	"	Pure bones, meat, blood, and muriate of potash.
" 31 1911	Potato Fertilizer..		" "	"	Pure bones, meat, blood, and kainit.
" 31 1912	Fertilizer "A".		Davies, Ltd., Montreal, Que.	"	Blood, bone and dry albuminous matter.
" 21 1913	Bowker's Vermont	Phosphate.	Bowker Fertilizer Co., Boston, Mass.	"	"
" 21 1914	Bowker's Hill and	Drill Phosphate.	" "	"	"
" 21 1915	Bowker's Potato and	Vegetable Phos-	" "	"	"
" 21 1916	Bowker's Corn Phos-	phate	" "	"	"

OF AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907—*Continued.*

	RESULTS OF ANALYSIS.										Relative Value per ton of 2,000 lbs.	Number of Sample.	Name of Analyt.
	Nitrogen.		Phosphoric acid.					Potash.	Moisture.				
	Total, including that of nitric acid and ammonia when present.	Total calculated as ammonia.	Soluble in water.	Citric Soluble.	Insoluble.	Total.	Total available.						
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	Scts.			
Guaranteed contents.	3.29	4.00	.....	.....	.....	10.00	7.00	9.50	.....	29.29		
Standard sample..	2.84	3.45	7.03	3.52	2.56	13.11	10.55	9.98	11.52	32.72	1896	Miss S. E. Wright	
Guaranteed contents	3.71	4.50	....	.....	.....	9.00	7.00	8.50	....	29.41	.....	
Standard sample..	3.26	3.84	5.27	2.57	4.31	12.15	7.84	10.52	4.12	32.04	1897	" "	
Guaranteed contents	8.24	10.00	....	.....	.....	11.00	.....	.....	.....	.....	.....	" "
Standard sample..	7.42	9.01	....	10.24	3.51	13.75	10.24	1.12	6.90	38.66	1898	" "
Guaranteed contents	7.89	9.58	....	.....	.....	9.12	.....	.....	10.85	.....	.....
Standard sample..	8.62	10.47	0.80	5.27	3.39	9.46	6.07	.....	6.10	35.36	1899	A. Lemoine.
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	1.50	.....	18.40	.....	
Standard sample..	2.21	2.68	6.71	2.88	2.75	12.34	9.49	1.89	15.75	21.44	1900		
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	3.00	.....	19.90	.....	
Standard sample..	2.24	2.72	5.95	3.32	2.75	12.02	9.27	3.22	15.10	22.45	1901		
Guaranteed contents	0.82	1.00	5.00	3.00	2.00	10.00	8.00	4.00	.....	16.69	.....	
Standard sample..	1.12	1.36	6.90	2.69	2.43	12.02	9.59	3.84	12.85	19.62	1902		
Guaranteed contents	.....	.....	6.00	5.00	1.00	12.00	11.00	2.00	.....	15.00	.....	
Standard sample..	.....	.....	9.59	3.33	1.79	14.71	12.92	1.89	15.05	17.60	1903	
Guaranteed contents	3.30	4.00	4.00	2.00	1.00	7.00	6.00	10.00	.....	28.52	.....	
Standard sample..	3.36	4.08	7.54	1.73	1.47	10.74	9.27	10.10	11.20	32.91	1904		
Guaranteed contents	3.30	4.00	6.00	2.00	1.00	9.00	8.00	7.00	.....	27.92	.....	
Standard sample..	3.50	4.25	6.84	2.43	2.75	12.02	9.27	7.01	11.50	30.61	1905		
Guaranteed contents	2.40	3.00	5.00	1.00	1.00	7.00	6.00	10.00	.....	25.56	.....	
Standard sample..	2.66	3.23	4.67	3.77	1.79	10.23	8.44	9.07	13.65	28.40	1906		
Guaranteed contents	.....	.....	11.00	.....	.....	.....	14.00	.....	.....	16.50	.....	
Standard sample..	.....	.....	12.02	0.78	3.19	15.99	12.80	.....	12.50	16.24	1907	
Guaranteed contents	7.21	8.76	....	.....	.....	11.71	.....	.....	9.81	.....	.....
Standard sample..	6.58	7.99	.....	9.91	2.75	12.66	9.91	.....	9.65	32.78	1908	
Guaranteed contents	13.47	16.36	.....	.....	.....	.....	.....	.....	12.31	.....	.....
Standard sample..	13.58	16.49	1.28	0.31	.....	1.59	1.59	.....	10.70	45.34	1909	
Guaranteed contents	8.89	10.79	.....	.....	.....	12.68	.....	1.60	7.85	.....	.....
Standard sample..	4.24	5.27	0.64	11.64	5.63	17.91	12.28	1.68	7.55	31.36	1910		
Guaranteed contents	5.11	6.20	.....	.....	.....	17.22	.....	0.84	5.02	.....	.....
Standard sample..	5.64	6.80	3.04	6.88	7.19	17.11	11.92	1.64	7.07	34.20	1911	Miss S. E. Wright	
Guaranteed contents	8.29	10.07	.....	.....	.....	11.25	.....	.....	2.95	.....	.....
Standard sample..	7.00	9.61	2.24	4.48	4.79	11.51	6.72	1.51	5.01	35.85	1912	"	
Guaranteed contents	2.47	3.00	.....	.....	.....	10.00	8.00	4.00	.....	.....	.....
Standard sample..	2.69	3.26	8.47	1.60	2.40	12.47	10.07	4.52	12.85	26.31	1913	"	
Guaranteed contents	2.47	3.00	.....	.....	.....	10.00	9.00	2.00	.....	.....	.....
Standard sample..	2.44	2.96	9.11	0.80	1.92	11.83	9.91	2.43	11.97	23.12	1914	"	
Guaranteed contents	1.65	2.00	.....	.....	.....	9.00	8.00	2.00	.....	16.71	.....	
Standard sample..	1.68	2.04	8.64	1.62	2.08	12.34	10.26	2.07	9.25	20.55	1915	"	
Guaranteed contents	1.65	2.00	.....	.....	.....	9.00	8.00	2.00	.....	.....	.....
Standard sample..	1.86	2.26	8.47	2.08	1.60	12.15	10.55	3.09	9.52	22.34	1916	"	
Trace.													

TABULATED DESCRIPTION OF 173 STANDARD SAMPLES OF

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials Produced.
1907.					
Jan. 21	1917	Bowker's Square Brand Bone and Potash.	Bowker Fertilizer Co., Boston, Mass.	Manufacturers...	
" 21	1918	Bowker's Bristol Fish and Potash.	"	"	
" 21	1919	Bowker's Farm and Garden.	"	"	
" 21	1920	Bowker's Sure Crop Phosphate.	"	"	
" 21	1921	Bowker's Potash Bone Phosphate.	"	"	
" 21	1922	Bowker's 6 p.c. Potato Fertilizer.	"	"	
" 21	1923	Bowker's 10 p. c. Manure.	"	"	
" 21	1924	Bowker's Superphosphate and Potash.	"	"	
" 21	1925	Bowker's Superphosphate.	"	"	
" 21	1926	Fresh Ground Bone.	"	"	
" 21	1927	Nitrate of Soda	"	"	
" 21	1928	Muriate of Potash..	"	"	
" 21	1929	Dissolved Bone Black	"	"	
" 21	1930	Stockbridge Special Complete Manure.	"	"	
Feb. 1	1931	Freeman's Sure Growth.	W. A. Freeman Co., Ltd., Hamilton, Ont	"	Phosphate, bone, blood, tankage, sulphuric acid, muriate of potash, sulphate of potash sulphate of ammonia, nitrate of soda.
" 1	1932	Freeman's Bone and Potash.	"	"	
" 1	1933	Freeman's Celery and Early Vegetable Manure.	"	"	
" 1	1934	Freeman's Phosphate Powder.	"	"	
" 1	1935	Freeman's Potato Manure.	"	"	
" 1	1936	Freeman's Tankage Manure.	"	"	
" 1	1937	Freeman's Special Tobacco Manure.	"	"	
" 1	1938	Freeman's Pure Bone Meal.	"	"	
Jan. 30	1939	Crocker's New York Special Phosphate.	American Agricultural Chemical Co., Buffalo Sales Dept., Buffalo, N.Y.	"	Animal matter (blood, bone and tankage), mineral phosphates, potash; all treated with sulphuric acid.
" 30	1940	Crocker's Wheat and Corn Fertilizer.	"	"	

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AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907--*Continued.*

	RESULTS OF ANALYSIS.										Relative value per ton of 2,000 lbs.	Number of sample.	Name of Analyst.
	Nitrogen.		Phosphoric Acid.						Potash.	Moisture.			
	To N, including that of nitric acid and ammonia when present.	Total, calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available						
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	Scts.			
Guaranteed contents	1 65	2 00				7 00	6 00	2 00		14 51			
Standard sample..	1 68	1 92	5 95	3 13	4 03	13 11	9 08	2 20	11 85	19 70	1917	A. Lemoine.	
Guaranteed contents	1 65	2 00				7 00	6 00	2 00		14 51			
Standard sample..	1 82	2 21	6 59	2 56	2 23	11 38	9 15	2 24	13 95	19 82	1918		
Guaranteed contents	1 65	2 00				9 00	8 00	2 00		16 71			
Standard sample..	1 54	1 97	7 35	0 77	3 71	11 83	8 12	2 06	13 85	18 08	1919		
Guaranteed contents	0 82	1 00				9 00	8 00	2 00		13 92			
Standard sample..	1 12	1 36	6 71	2 37	1 47	10 55	9 08	1 89	14 00	16 80	1920	A. Lemoine.	
Guaranteed contents	0 82	1 00				7 00	6 00	2 00		11 69			
Standard sample..	1 12	1 36	7 22	2 18	2 75	12 15	9 40	1 85	13 45	17 53	1921		
Guaranteed contents	0 82	1 00				7 00	6 00	6 00		15 69			
Standard sample..	0 98	1 19	4 47	3 85	2 55	10 87	8 32	4 86	12 95	18 54	1922		
Guaranteed contents	0 82	1 00				6 00	5 00	10 00		18 59			
Standard sample..	1 19	1 44	3 50	3 92	2 00	9 42	7 42	8 42	12 20	21 58	1923	A. Volm.	
Guaranteed contents						11 00	10 00	1 00		12 30			
Standard sample..	0 22	0 27	10 22	1 05	2 45	13 72	11 27	1 12	12 95	16 01	1924		
Guaranteed contents						14 00	12 00			13 80			
Standard sample..	0 23	0 28	10 77	2 93	2 50	16 20	13 70		17 10	17 67	1925		
Guaranteed contents	2 47	3 00				18 00	5 00			17 80			
Standard sample..	2 95	3 57		15 28	7 97	23 25	15 28		5 70	28 64	1926		
Guaranteed contents	14 82	18 00								50 39			
Standard sample..	14 28	17 34							2 00	48 55	1927		
Guaranteed contents								50 00		50 00			
Standard sample..								49 90	1 25	49 90	1928		
Guaranteed contents						16 00	15 00			16 80			
Standard sample..	0 14	0 17	9 17	3 91	1 82	14 90	13 08		14 95	16 33	1929		
Guaranteed contents	3 30	4 00				7 00	6 00	10 00		28 12			
Standard sample..	2 94	3 67	5 62	1 68	0 80	8 10	7 36	10 58	12 90	29 41	1930		
Guaranteed contents	2 88	3 50				8 00		3 00					
Standard sample..	3 58	4 35	4 43	4 68	1 60	10 71	9 11	6 12	12 22	29 24	1931	Miss S. E. Wrigh	
Guaranteed contents	1 65	2 00				9 00		6 00					
Standard sample..	2 83	3 43	4 95	3 36	1 28	9 59	8 31	8 79	9 57	28 43	1932		
Guaranteed contents	4 12	5 00				9 00		5 00					
Standard sample..	5 18	6 29	3 35	5 12	1 60	10 07	8 47	8 81	8 57	36 55	1933		
Guaranteed contents						15 00							
Standard sample..	0 39	0 48	7 68	2 23	5 92	15 82	9 91		16 80	14 78	1934		
Guaranteed contents	2 47	3 00				8 00		5 00					
Standard sample..	3 16	3 84	4 48	3 83	1 92	10 29	8 31	8 03	7 75	28 94	1935		
Guaranteed contents	4 12	5 00				12 00							
Standard sample..	5 36	6 49	1 28	7 35	3 04	11 67	8 63		14 25	27 68	1936		
Guaranteed contents	2 47	3 00				7 00		4 00					
Standard sample..	3 08	3 74	2 43	3 52	2 87	8 82	5 95	5 02	9 45	23 14	1937	A. Lemoine.	
Guaranteed contents	2 47	3 00				20 00							
Standard sample..	4 14	5 03	1 15	12 29	10 55	23 99	13 41		6 65	31 31	1938		
Guaranteed contents			8 00	2 00	1 00	11 00	10 00	8 00		20 10			
Standard sample..			4 63	3 37	3 67	11 67	8 00	8 24	10 70	18 61	1939		
Guaranteed contents	2 06	2 50	6 00	2 00	1 00	9 00	8 00	1 50		18 20			
Standard sample..	2 10	2 55	7 35	1 28	3 07	11 70	8 63	2 49	12 55	20 77	1940		

* None. † Trace.

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TABULATED DESCRIPTION OF 163 STANDARD SAMPLES OF

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials produced.
1907.					
Jan. 30 1941		Crocker's Cabbage and Potato Manure	American Agricultural Chemical Co., Buffalo Sales Dept., Buffalo, N.Y.	Manufacturers.....	
" 30 1942		Bradley's New Method Fertilizer.	" " ..	"	
" 30 1943		Bradley's B. D. Sea Fowl Guano.	" " ..	"	Animal matter (blood, bone and tankage) mineral phosphates, potash; all treated with sulphuric acid.
" 30 1944		Bradley's Complete Manure for Potatoes and Vegetables	" " ..	"	" " ..
" 30 1945		Special Potash Mixture.	" " ..	"	" " ..
" 30 1946		High Grade Potash Compound.	" " ..	" ..	" " ..
" 30 1947		Northwestern Complete Manure.	" " ..	"	" " ..
" 30 1948		Northwestern Tobacco Fertilizer.	" " ..	"	" " ..
Feb. 5 1949		New England Peerless Fertilizer.	New England Fertilizer Co., 40a North Market St., Boston, Mass.	" ..	Blood, meat, bone, bone-black, bone phosphates, nitrate of soda or sulphate of ammonia and sulphate or muriate of potash.
" 5 1950		New England Potato Fertilizer.	" " ..	"	" " ..
" 5 1951		New England Corn & Grain Fertilizer.	" " ..	"	" " ..
" 4 1952		Swift's Lowell Bone Fertilizer.	Swift's Lowell Fertilizer Co., 44 North Market St., Boston, Mass.	"	" " ..
" 4 1953		Swift's Lowell Cereal Fertilizer.	" " ..	" ..	" " ..
" 4 1954		Swift's Lowell Empress Brand.	" " ..	" ..	" " ..
" 4 1955		Swift's Lowell Animal Brand.	" " ..	"	" " ..
" 4 1956		Swift's Lowell Potato Manure.	" " ..	"	" " ..
" 4 1957		Swift's Lowell Potato Phosphate.	" " ..	"	" " ..
" 4 1958		Swift's Lowell Grind Bone.	" " ..	"	" " ..
" 4 1959		Swift's Lowell Potato Grower.	" " ..	"	" " ..
" 4 1960		Swift's Lowell Superior Fertilizer with 10 p.c. Potash.	" " ..	"	" " ..
" 12 1961		Thomas Phosphate Powder.	Chemical Works, late H. & E. Albert, 15 Philpot Lane, London, Eng.	Anglo-Canadian Chemical Co., St. John, N.B.	Ground basic slag

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AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907—Continued.

RESULTS OF ANALYSIS.												Name of Analyst.
	Nitrogen.		Phosphoric Acid.					Potash.	Moisture.	Relative value per ton of 2,000 lbs.	Number of Sample.	
	Total, including that of nitric acid and ammonia when present.	Total, calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.					
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	¢ cts.		
Guaranteed contents	2.47	3.00	6.00	2.00	1.00	9.00	8.00	6.00	.....	24 10	
Standard sample..	2.72	3.30	5.76	3.19	2.56	11.51	8.95	4.05	12.02	24 49	1941 A. Lemoine.	
Guaranteed contents	0.82	1.00	6.00	2.00	1.00	9.00	8.00	2.00	.....	14 49	
Standard sample..	0.86	1.05	5.30	1.95	2.77	10.02	7.25	2.25	11.15	14 51	1942 ..	
Guaranteed contents	2.06	2.50	6.00	2.00	1.00	9.00	8.00	1.50	.....	18 20	
Standard sample..	1.90	2.55	5.02	2.65	3.00	10.67	7.67	1.80	15.00	18 09	1943 A. Valin.	
Guaranteed contents	3.29	4.00	6.00	2.00	1.00	9.00	8.00	7.00	.....	22 89	
Standard sample..	3.99	4.84	5.35	2.00	3.75	11.10	7.35	7.32	10.00	30 63	1944 ..	
Guaranteed contents	0.82	1.00	7.00	2.00	1.00	10.00	9.00	7.00	.....	20 49	
Standard sample..	1.26	1.53	6.87	1.60	3.04	11.51	8.47	7.18	16.00	21 31	1945 ..	
Guaranteed contents	1.65	2.00	6.00	2.00	1.00	9.00	8.00	10.00	.....	25 31	
Standard sample..	1.68	2.04	5.12	2.21	1.67	9.00	7.33	10.34	14.25	25 12	1946 ..	
Guaranteed contents	2.06	2.50	6.00	2.00	1.00	9.00	8.00	3.00	.....	19 70	
Standard sample..	2.49	3.03	6.87	1.76	2.08	10.71	8.63	4.88	13.32	24 15	1947 Miss S. E. Wright	
Guaranteed contents	1.65	2.00	6.00	2.00	1.00	9.00	8.00	10.00	.....	25 31	
Standard sample..	1.72	2.09	6.08	1.11	2.56	9.75	7.19	13.07	12.87	28 21	1948 ..	
Guaranteed contents	0.82	1.00	.....	.....	1.00	8.00	7.00	1.00	.....	11 79	
Standard sample..	1.07	1.31	5.59	0.81	1.28	7.68	6.40	2.36	5.27	13 98	1949 ..	
Guaranteed contents	1.65	2.00	.....	.....	.....	8.00	7.00	4.00	.....	17 61	
Standard sample..	1.57	1.90	5.43	1.76	2.72	9.91	7.19	4.04	5.70	18 66	1950 ..	
Guaranteed contents	1.24	1.50	.....	.....	.....	8.00	7.00	2.00	.....	14 22	
Standard sample..	1.36	1.65	6.18	2.13	2.08	10.39	8.31	2.41	5.92	17 41	1951 ..	
Guaranteed contents	1.65	2.00	.....	.....	.....	9.00	8.00	3.00	.....	17 71	
Standard sample..	1.65	2.01	6.87	.....	3.68	10.55	6.87	4.94	8.67	19 90	1952 ..
Guaranteed contents	0.82	1.00	.....	.....	1.00	8.00	7.00	1.00	.....	11 79	
Standard sample..	1.26	1.53	2.43	4.28	2.11	8.82	6.71	2.04	6.25	14 58	1953 A. Lemoine.	
Guaranteed contents	1.24	1.50	.....	.....	1.00	8.00	7.00	2.00	.....	14 22	
Standard sample..	1.54	1.87	4.99	3.00	3.39	11.38	7.99	2.72	8.90	18 27	1954 ..	
Guaranteed contents	2.47	3.00	.....	.....	.....	10.00	8.00	4.00	.....	21 80	
Standard sample..	2.38	2.89	4.67	3.96	3.39	12.02	8.63	4.67	8.70	23 74	1955 ..	
Guaranteed contents	1.65	2.00	.....	.....	.....	8.00	7.00	4.00	.....	17 61	
Standard sample..	1.68	2.04	4.15	3.21	1.91	9.27	7.36	4.42	5.35	19 21	1956 ..	
Guaranteed contents	2.47	3.00	.....	.....	.....	9.00	8.00	6.00	.....	23 50	
Standard sample..	2.80	3.40	4.03	4.29	2.55	10.87	8.32	6.46	8.00	26 30	1957 ..	
Guaranteed contents	2.47	3.00	.....	.....	.....	25.00	.....	.....	.....	.....
Standard sample..	2.80	3.40	0.96	19.00	8.18	28.14	19.96	trace	5.80	33 46	1958 ..	
Guaranteed contents	3.30	4.00	.....	.....	.....	7.00	6.00	10.00	.....	28 12	
Standard sample..	3.40	4.13	4.64	2.24	1.12	8.00	6.88	10.98	7.50	30 91	1959 A. C. Macfarlane	
Guaranteed contents	3.70	4.50	.....	.....	1.00	8.00	7.00	10.00	.....	30 58	
Standard sample..	3.59	4.25	4.15	4.00	2.24	10.39	8.15	10.87	5.75	32 82	1960 ..	
Guaranteed contents	14.00		
Standard sample..	13.76	2.87	16.63	13.76	trace	16 00	1961 ..	

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TABULATED DESCRIPTION OF 173 STANDARD SAMPLES OF

Date when Advised.	Number of Sample.	Description.	Name of Manufacturer.	By whom Sent.	From what Materials Produced.
1907.					
Feb. 12 1962	Albert Horticultural Manure, Brand A. G.	Chemical Works, late A. & E. Albert, in Biebrich, on the Rhine, Germany.	Anglo-Canadian Chemical Co., St. John, N.B.		
18 1963	Ground Bone.	Pidgeon Fertilizer Co., Ltd., Windsor, N.S.	Manufacturers		Bones ground
18 1964	Intense Brand.				Nitrate of soda, dried blood and tankage, ground bone, muriate of potash, potash salts, rock phosphate, sulphuric acid and sulphate of ammonia.
18 1965	Eureka Superphosphate.				
18 1966	Potato Manure.				
18 1967	Potato Guano. . . .	Pidgeon Fertilizer Co., Ltd., Windsor, N.S.	Manufacturers. . . .		Nitrate of soda, dried blood and tankage, ground bone, muriate of potash, potash salts, rock phosphate, sulphuric acid and sulphate of ammonia.
12 1968	Michigan Carbon Fruit and Vine Fertilizer.	Michigan Carbon Works, Detroit, Mich.	The American Agricultural Chemical Co., Buffalo Sales Dept.		Animal matter (blood, bone and tankage) mineral phosphates, potash ; all treated with sulphuric acid.
12 1969	Michigan Carbon Complete Manure.				
12 1970	Michigan Carbon Defiance Fertilizer				
" 26 1971	Thomas Phosphate Powder.	Chemical Works, late H. & E. Albert, 15 Philpot Lane, London, E.C.	Anglo-Canadian Chemical Co., St. John, N.B.		Ground basic slag
" 26 1972	Coriolis Fertilizer No. 1, for Potatoes	John Poynter, Son and Macdonalds, Glasgow, Scotland.	Baron Gustave de Coriolis, 56 Notre Dame St. East, Montreal.		Sulphate of ammonia, nitrogenous substances, superphosphates, sulphate of potash and muriate of potash.
" 28 1973	Homestead, a Bone Black Fertilizer.	Michigan Carbon Works, Detroit, Mich.	Manufacturers.		Dissolved bone black, mineral phosphate, sulphate of ammonia, acidulated tankage, sulphate or muriate of potash
28 1974	Homestead Potato and Tobacco Fertilizer.				
28 1975	Homestead High Grade Garden and Vegetable Fertilizer.				
28 1976	Desiccated Bone.			" "	Produced from pure animal bone.
March 2 1977	Coriolis Fertilizer No. 7 for Fodder, Indian Corn and Tobacco.	The Freeman Company, Hamilton, Ont.	Baron Gustave de Coriolis 56 Notre Dame St. East, Montreal.		Sulphate of ammonia, nitrate of soda, superphosphates, sulphate of potash, and muriate of potash.

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AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907--*Continued.*

	RESULTS OF ANALYSIS.										Relative value per ton of 2,000 lbs.	Number of Sample.	Name of Analyst.
	Nitrogen.		Phosphoric Acid.										
	Total, including that of nitric acid and ammonia when present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.	Potash.	Moisture.				
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	S cts.			
Guaranteed contents	12.37	15.02	10.71	.....	.....	.....	.....	15.50	.....	70.41		
Standard sample..	12.04	14.62	9.14	1.73	1.47	12.34	10.87	16.43	7.55	70.68	1962	A. C. Macfarlane	
Guaranteed contents	2.47	3.00	.....	.....	.....	20.00	.....	.....	.....	.....
Standard sample..	3.01	3.65	.....	13.92	9.22	23.14	13.92	.....	6.05	27.71	1963	A. Valin.
Guaranteed contents	2.88	3.50	.....	.....	.....	7.00	.....	4.50	.....	.....	
Standard sample..	2.94	3.57	6.50	0.92	0.70	8.12	7.42	3.70	11.65	22.72	1964	.....
Guaranteed contents	2.06	2.50	.....	.....	.....	8.00	.....	1.50	.....	.....	
Standard sample..	2.33	2.83	5.25	2.77	1.10	9.12	8.02	1.54	16.87	19.14	1965	.....
Guaranteed contents	2.47	3.00	.....	.....	.....	9.00	.....	4.00	.....	.....	
Standard sample..	2.40	2.90	5.92	2.98	1.52	10.42	8.90	3.47	13.95	22.47	1966	.....
Guaranteed contents	2.06	2.50	.....	.....	.....	10.00	8.00	1.50	.....	17.90		
Standard sample..	2.00	2.42	5.06	2.99	1.07	9.12	8.05	1.79	17.35	18.27	1967	A. Valin.	
Guaranteed contents	1.65	2.00	6.00	2.00	1.00	9.00	8.00	10.00	.....	25.31		
Standard sample..	1.98	2.41	5.43	3.52	2.75	11.70	8.95	9.87	12.90	27.82	1968	A. Lemoine.	
Guaranteed contents	1.65	2.00	6.00	2.00	1.00	9.00	8.00	4.00	.....	19.31		
Standard sample..	1.60	1.94	6.35	2.72	2.35	11.42	9.07	4.03	13.25	20.78	1969	A. Valin.	
Guaranteed contents	1.65	2.00	6.00	2.00	1.00	9.00	8.00	2.00	.....	17.31		
Standard sample..	1.78	2.15	5.85	2.70	1.85	10.40	8.55	2.12	12.50	18.71	1970	.....
Guaranteed contents	.....	.....	.....	.....	.....	17.00	.....	.....	.....	.....
Standard sample..	.....	.....	.....	14.45	4.25	18.70	14.45	.....	4.75	17.16	1971	.....
Guaranteed contents	4.45	5.40	.....	.....	.....	6.00	.....	9.50	.....	.....	
Standard sample..	5.01	6.08	6.15	0.82	0.50	7.47	6.97	9.34	5.95	34.80	1972	.....
Guaranteed contents	2.06	2.50	.....	.....	.....	8.00	.....	1.50	.....	.....	
Standard sample..	1.96	2.38	6.12	1.06	1.82	9.00	7.18	1.56	12.60	17.28	1973	.....
Guaranteed contents	2.06	2.50	.....	.....	.....	8.00	.....	3.00	.....	.....	
Standard sample..	2.25	2.73	5.47	1.73	2.40	9.60	7.29	3.51	13.00	20.34	1974	.....
Guaranteed contents	2.06	2.50	.....	.....	.....	8.00	.....	6.00	.....	.....	
Standard sample..	2.17	2.64	6.27	2.49	2.43	11.19	8.76	6.93	14.90	25.29	1975	A. Lemoine.	
Guaranteed contents	1.24	1.50	.....	.....	.....	25.00	.....	.....	.....	.....
Standard sample..	1.12	1.36	.....	19.32	13.43	32.75	19.32	.....	10.55	28.86	1976	.....
Guaranteed contents	5.77	7.00	5.00	8.00			
Standard sample..	6.93	8.41	2.75	0.57	1.79	5.11	3.32	7.68	9.55	35.71	1977	

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TABULATED DESCRIPTION OF 173 STANDARD SAMPLES OF

Date when Advised	Number of Sample	Designation.	Name of Manufacturer.	By whom sent.	From what materials Produced.
1907.					
March 2	1978	Coriolis Extra High Grade Fertilizer No. 4 for cabbage, carrots, beets, celery, other vegetables and flowers.	The Freeman Company, Hamilton, Ont.	Baron Gustave de Coriolis, 56 Notre Dame St., East, Montreal.	Sulphate of ammonia, nitrate of soda, superphosphates, sulphate of potash, and muriate of potash.
	2	1979 Coriolis Fertilizer No. 3, for grain.	" " "	" " "	" " "
Feb. 25	1980	Ceres Superphosphate.	Nova Scotia Fertilizer Co., Halifax, N.S.	" " "	Bone-char, bone, dried blood, tankage, meat, fish bone, phosphates, sulphate of ammonia, nitrate of soda, high grade muriate of potash or sulphate of potash and sulphuric acid.
	25	1981 Southern Guano...	" " "	" " "	Phosphatic guanos, bone char, dried blood, tankage, meat, fish, bone, phosphates, sulphates of ammonia, nitrate of soda, high grade muriate of potash or sulphate of potash and sulphuric acid.
	25	1982 Potato Phosphate.	" " "	" " "	Bone-char, bone, dried blood, tankage, meat, fish, bone, phosphates, sulphate of ammonia, nitrate of soda, high grade muriate of potash or sulphate of potash and sulphuric acid.
	25	1983 Blood, Bone and Potash.	" " "	" " "	" " "
March 6	1984	Imperial Superphosphate.	Provincial Chemical Fertilizer Co., Ltd. St. John, N.B.	" " "	" " "
	6	1985 Potato Phosphate...	" " "	" " "	" " "
	6	1986 Victor Guano.	" " "	" " "	" " "
	6	1987 Bone meal	" " "	" " "	" " "
	6	1988 Blood, Bone and Potash.	" " "	" " "	" " "
	6	1989 10% Complete Aroostook Potato	" " "	" " "	" " "
Mar 7	1990	Reid's Superphosphate.	Thos. Reid, St. John, N.B.	Manufacturer...	Bone, meat, fish refuse, charcoal, kainic, sulphate of ammonia, &c.
" 8	1991	Gregory's Special Tobacco Guano.	Michigan Carbon Works, Detroit, Mich.	Manufacturers	" " "
	12	1992 Capelton Superphosphate No. 1.	The Capelton Chemical and Fertilizer Co., Buckingham, Que.	" " "	Phosphate, sulphate of ammonia, sulphate muriate and nitrate of potash and tankage.
	12	1993 Royal Canadian ..	" " "	" " "	" " "

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AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907—Continued.

RESULTS OF ANALYSIS.												
	Nitrogen.		Phosphoric Acid.					Potash.	Moisture.	Relative Value per ton of 2,000 lbs.	Number of Sample.	Name of Analyst.
	Total, including that of nitric acid and ammonia when present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.					
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	S cts.		
Guaranteed contents	8.23	10.00	6.00					10.00		45.18		
Standard sample..	10.08	12.24	3.07	1.41	1.15	5.63	4.48	6.27	9.50	46.11	1978	A. Lemoine.
Guaranteed contents	6.58	8.00	6.00					10.00		39.57		
Standard sample..	7.35	8.92	2.75	2.37	2.23	7.35	5.12	9.03	8.75	40.60	1979	
Guaranteed contents	1.65	2.00				7.00		2.00				
Standard sample..	2.15	2.61	6.90	1.86	2.75	11.51	8.76	3.78	12.65	22.24	1980	
Guaranteed contents	1.65	2.00				7.00		2.50				
Standard sample..	2.66	3.23	6.71	0.64	1.79	9.14	7.35	5.19	8.70	23.52	1981	
Guaranteed contents	1.65	2.00				7.00		4.00				
Standard sample..	2.74	3.33	6.71	1.28	2.75	10.74	7.99	4.34	9.25	23.94	1982	
Guaranteed contents	1.65	2.00				7.00		4.00				
Standard sample..	2.86	3.47	7.54	0.26	2.43	10.23	7.80	4.34	9.60	24.13	1983	
Guaranteed contents	2.47	3.00				10.50		1.50				
Standard sample..	3.20	3.89	6.71	1.29	1.91	9.91	8.00	2.27	8.55	23.19	1984	
Guaranteed contents	2.06	2.50				8.00		6.50				
Standard sample..	2.04	2.48	5.60	1.50	0.46	7.50	7.10	6.94	11.80	22.37	1985	A. Valin.
Guaranteed contents	1.65	2.00				7.00		2.50				
Standard sample..	1.99	2.41	4.30	4.25	0.86	9.35	8.55	2.99	10.65	19.83	1986	
Guaranteed contents	2.55	3.10				24.14						
Standard sample..	3.22	3.91		15.88	9.07	24.95	15.88		7.00	30.49	1987	
Guaranteed contents	1.65	2.00				7.00		4.00				
Standard sample..	2.24	2.72	3.60	3.40	1.60	8.60	7.00	3.47	6.60	19.33	1988	
Guaranteed contents	3.30	4.00				8.00		10.00				
Standard sample..	2.80	3.40	4.32	2.95	1.35	8.62	7.27	10.75	9.50	29.09	1989	
Guaranteed contents												
Standard sample..	4.41	5.35	2.16	3.41	4.99	10.47	5.57	2.00	5.25	24.80	1990	A. Valin.
Guaranteed contents	2.47	3.00				8.00		4.00				
Standard sample..	3.22	3.91	6.71	2.57	1.91	11.19	9.28	4.32	9.52	26.72	1991	A. Lemoine.
Guaranteed contents						10.00						
Standard sample..	2.52	3.06	2.23	7.68	2.43	12.34	9.91	1.33	11.45	21.75	1992	
Guaranteed contents	3.30	4.00				9.00		5.00				
Standard sample..	4.34	5.27	7.86	0.97	1.91	10.74	8.83	5.19	11.55	31.02	1993	

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TABULATED DESCRIPTION OF 173 STANDARD SAMPLES

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials Produced.
1907.					
Mar.	12 1994	Victor..	The Capelton Chem- ical and Fertilizer Co., Buckingham, Que.	Manufacturers . . .	Phosphate, sulphate of am- monia, sulphate muriate, and nitrate of potash and tankage.
	12 1995	Reliance...	" " " "	" " " "	" " " "
"	13 1996	Bone Meal.....	W. Harris & Co., Toronto, Ont.	" " " "	" " " "
	13 1997	Fertilizer " H." . . .	" " " "	" " " "	" " " "
	15 1998	Superphosphate of Lime.	Standard Fertilizer & Chemical Co., Ltd., Smith's Falls	" " " "	" " " "
"	15 1999	Special Fertilizer ...	" " " "	" " " "	" " " "
	15 2000	Standard Fertilizer.	" " " "	" " " "	" " " "
	15 2001	Royal Fertilizer.....	" " " "	" " " "	" " " "
	15 2002	Bone Meal	" " " "	" " " "	" " " "
"	15 2003	Nitrate of Soda . . .	" " " "	" " " "	" " " "
	19 2004	Essex Ground Bone.	Russia Cement Co., Mfg. of Essex High Grade Fertilizers, Gloucester, Mass.	S. C. Shaffner, Gran- ville Ferry, N.S.	" " " "
Feb.	4 2005	Bradley's Superphos- phate for Orchards	The American Agri- cultural Chemical Co., Boston Sales Dept., Boston, Mass.	Manufacturers.....	Bone black or phosphatic guanos, muriate or sul- phate of potash.
	4 2006	Bradley's Potato Fer- tilizer.	" " " "	" " " "	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, ni- trate of soda or sulphate of ammonia, sulphate or muriate of potash, sul- phuric acid,
"	4 2007	Bradley's XL Super- phosphate of Lime	" " " "	" " " "	" " " "
	4 2008	Bradley's Farmer's New Method Fer- tilizer.	" " " "	" " " "	" " " "
	4 2009	Bradley's Fine Ground Bone.	" " " "	" " " "	" " " "
	4 2010	Bradley's Eclipse Phosphate.	" " " "	" " " "	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, ni- trate of soda or sulphate of ammonia, sulphate or muriate of potash, sul- phuric acid.
	4 2011	Bradley's Eureka Fertilizer.	" " " "	" " " "	" " " "
"	4 2012	Bradley's Alkaline Bone with Potash.	" " " "	" " " "	Bone black or phosphatic guanos, muriate or sul- phate of potash.

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OF AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907—*Continued.*

—	RESULTS OF ANALYSIS.										Relative Value per ton of 2,000 lbs.	Number of Sample.	Name of Analyst.
	Nitrogen.		Phosphoric Acid.						Potash.	Moisture.			
	Total, including that of nitric acid and ammonia when present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.						
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	\$ cts.			
Guaranteed contents	2.00	.....	.....	.....	.....	7.00	.....	3.00	.....	.....	.....	.....
Standard sample..	3.01	3.87	3.83	2.44	2.23	8.50	6.27	5.29	8.35	23 47	1994	"	
Guaranteed contents	1.65	2.00	.....	.....	.....	6.00	.....	2.00	.....	.....	.....	.....
Standard sample..	2.80	3.40	1.91	3.21	1.91	7.03	5.12	3.53	5.30	19 45	1995	"	
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	4.76	5.84	.....	15.04	6.39	21.43	15.04	.....	4.26	33 69	1996	"
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	5.88	7.14	.....	6.20	5.95	12.15	6.20	.....	8.25	28 60	1997	"
Guaranteed contents	.....	.....	.....	.....	.....	14.00	12.00	.....	.....	.....	.....	.....
Standard sample..	0.70	0.85	15.54	1.22	4.67	21.43	16.76	trace	2.35	23 77	1998	"	
Guaranteed contents	2.88	3.50	.....	.....	.....	10.00	8.00	6.00	.....	.....	.....	.....
Standard sample..	3.50	4.25	8.82	1.86	4.03	14.71	10.68	7.89	3.85	33 63	1999	"	
Guaranteed contents	2.06	2.50	.....	.....	.....	11.00	9.00	2.00	.....	.....	.....	.....
Standard sample..	2.66	3.23	11.83	1.28	4.67	17.78	13.11	2.29	3.85	28 34	2000	"	
Guaranteed contents	1.65	2.00	.....	.....	.....	10.00	8.00	3.00	.....	.....	\$18.01.	.....
Standard sample..	1.96	2.38	13.11	0.45	4.35	17.91	13.56	3.37	2.70	27 55	2001	"	
Guaranteed contents	3.29	4.00	.....	.....	.....	.....	20.00	.....	.....	.....	.....	.....
Standard sample..	2.24	2.48	.....	15.36	10.10	25.46	15.36	.....	6.00	27 09	2002	"
Guaranteed contents	14.00	17.00	.....	.....	.....	.....	.....	.....	.....	47 60	.....	.....
Standard sample..	14.56	17.68	.....	.....	.....	.....	.....	.....	0.50	49 50	2003	"
Guaranteed contents	2.47	3.00	.....	.....	.....	20.00	.....	.....	.....	.....	.....	.....
Standard sample..	3.50	4.25	.....	15.49	12.02	27.51	15.49	.....	3.20	31 85	2004	"
Guaranteed contents	.....	.....	11.00	.....	.....	.....	14.00	.....	.....	16 50	.....	.....
Standard sample..	.....	.....	11.51	2.24	2.43	16.18	13.75	0.57	11.50	17 58	2005	"
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	3.00	.....	19 90	.....	.....
Standard sample..	2.24	2.48	7.03	5.76	1.15	13.94	12.79	2.99	13.20	25 72	2006	"	
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	1.50	.....	18 40	.....	.....
Standard sample..	2.10	2.55	4.79	5.64	1.91	12.34	10.43	1.56	14.00	21 23	2007	"	
Guaranteed contents	1.03	1.25	6.00	2.00	2.00	10.00	8.00	2.00	.....	15 50	.....	.....
Standard sample..	1.13	1.38	6.87	2.39	1.44	10.70	9.26	2.27	14.60	17 42	2008	A. C. Macfarlane	
Guaranteed contents	2.47	3.00	.....	.....	.....	20.60	.....	.....	.....	.....	.....	.....
Standard sample..	1.99	2.41	trace.	16.62	4.48	21.10	16.62	.....	6.10	25 99	2009	"
Guaranteed contents	1.03	1.25	6.00	2.00	2.00	10.00	8.00	2.00	.....	15 50	.....	.....
Standard sample..	1.08	1.31	5.59	4.16	1.60	11.35	9.75	2.16	15.25	17 60	2010	"	
Guaranteed contents	1.03	1.25	6.00	2.00	2.00	10.00	8.00	2.00	.....	15 50	.....	.....
Standard sample..	1.04	1.26	7.19	3.04	1.12	11.35	10.23	1.98	14.10	17 82	2011	"	
Guaranteed contents	6.00	5.00	1.00	12.00	11.00	2.00	15 00	
Standard sample..	6.91	3.80	1.60	12.31	10.71	4.94	13.75	17 89	2012	Miss S. E. Wright	

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TABULATED DESCRIPTION OF 173 STANDARD SAMPLES

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials Produced.
1907.					
Feb.	4 2013	Bradley's Complete Manure with 10 p. c. Potash.	The American Agricultural Chemical Co., Boston Sales Dept., Boston, Mass.	Manufacturers ...	Bone black, animal bone, phosphatic Guanos, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate or muriate of potash, sulphuric acid.
"	4 2014	Read's Standard Superphosphate.	The American Agricultural Chemical Co., Boston Sales Dept., Boston, Mass.	Manufacturers . . .	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate or muriate of potash, sulphuric acid.
"	4 2015	Read's Sure Catch Fertilizer.	" " . .	"	Bone black or phosphatic guanos, muriate or sulphate of potash.
"	4 2016	Read's Fish, Bone and Potash	" " .	" . . .	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate or muriate of potash, sulphuric acid.
"	4 2017	Read's Practical Potato Special.	" " .	"	" " . .
"	4 2018	Read's Vegetable and Vine.	" " . .	" . . .	" " . .
"	4 2019	Read's Potato Manure.	" " . .	"	" " . .
"	4 2020	Read's High Grade Farmer's Friend.	" " . .	"	" " . .
"	4 2021	Tucker's Imperial Bone Superphosphate.	" " . .	" . . .	" " . .
"	4 2022	Williams & Clark's American Potato Manure.	" " .	" . . .	" " . .
"	4 2023	Pacific Potato Special	" " .	"	" " . .
"	4 2024	Pacific Nobsque Guano.	" " . .	" . . .	" " . .
"	4 2025	Pacific Fine Ground Bone.	" " .	" . . . .	. . . . .
"	4 2026	Soluble Pacific Guano	" " .	"	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate or muriate of potash, sulphuric acid.
"	4 2027	Quinnipiac Climax Phosphate for all Crops.	" " .	"	" " . .
"	4 2028	Quinnipiac Potato Manure.	" " .	"	" " .
"	4 2029	Quinnipiac Market Garden Manure.	" " . .	"	" "

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OF AGRICULTURAL FERTILIZERS, REGISTERED FOR 1907—Continued.

	RESULTS OF ANALYSIS.										Relative Value per ton of 2,000 lbs.	Number of Sample.	Name of Analyst.
	Nitrogen.		Phosphoric Acid.					Potash.	Moisture.				
	Total, including that of nitric acid and ammonia when present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.						
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	\$ cts.			
Guaranteed contents	3.30	4.00	4.00	2.00	1.00	7.00	6.00	10.60	.....	28.52		
Standard sample..	3.40	4.10	5.63	2.63	1.28	9.59	8.31	11.64	12.00	33.29	2013	Miss S.E. Wright.	
Guaranteed contents	0.82	1.00	5.00	3.00	2.00	10.00	8.00	4.00	.....	16.69		
Standard sample..	0.76	0.92	5.37	4.38	2.08	11.83	9.75	5.14	12.22	19.61	2014	"	
Guaranteed contents	.....	.....	6.00	5.00	1.00	12.00	11.00	2.00	.....	15.00		
Standard sample..	.....	.....	7.67	4.32	1.76	13.75	11.99	4.56	12.90	19.04	2015	"
Guaranteed contents	1.98	2.40	.....	.....	.....	.....	4.00	4.00	.....	.....	
Standard sample..	2.07	2.52	4.80	4.63	1.44	10.87	9.43	5.14	11.87	23.46	2016	"	
Guaranteed contents	0.82	1.00	2.00	2.00	1.00	5.00	4.00	8.00	.....	15.69		
Standard sample..	1.33	1.50	4.79	1.61	1.60	8.00	6.40	10.56	12.70	23.08	2017	"	
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	6.00	.....	22.90		
Standard sample..	2.10	2.55	6.07	3.72	2.55	12.34	9.79	6.52	15.00	25.79	2018	A. Lemoine.	
Guaranteed contents	2.40	3.00	5.00	1.00	1.00	7.00	6.00	10.00	.....	25.56		
Standard sample..	2.52	3.06	4.99	2.05	3.19	10.23	7.04	10.13	11.35	27.90	2019	"	
Guaranteed contents	3.30	4.00	4.00	2.00	1.00	7.00	6.00	10.00	.....	28.52		
Standard sample..	2.94	3.57	5.75	1.92	2.11	9.78	7.67	10.17	12.15	29.81	2020	"	
Guaranteed contents	1.03	1.25	6.00	2.00	2.00	10.00	8.00	2.00	.....	15.50		
Standard sample..	1.40	1.70	5.75	4.61	2.75	13.11	10.36	1.97	14.65	19.53	2021	"	
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	3.00	.....	19.90		
Standard sample..	1.96	2.38	6.71	2.89	2.87	12.47	9.60	3.03	14.85	21.79	2022	"	
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	3.00	.....	19.90		
Standard sample..	1.96	2.38	6.59	4.09	3.07	13.75	10.68	3.20	12.50	23.19	2023	"	
Guaranteed contents	1.03	1.25	6.00	2.00	2.00	10.00	8.00	2.00	.....	15.50		
Standard sample..	1.18	1.43	6.71	2.56	2.08	11.35	9.27	4.04	15.25	19.54	2024	A. C. Macfarlane.	
Guaranteed contents	2.47	3.00	.....	.....	.....	20.60	.....	.....	.....	.....
Standard sample..	2.18	2.65	Tr.	12.47	10.71	23.18	12.47	.....	6.85	23.91	2025	"
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	1.50	.....	18.40		
Standard sample..	2.02	2.45	4.95	3.68	2.72	11.35	8.63	3.52	15.00	21.20	2026	"	
Guaranteed contents	1.03	1.25	6.00	2.00	2.00	10.00	8.00	2.00	.....	15.50		
Standard sample..	1.19	1.44	6.87	1.92	2.08	10.87	8.79	3.83	15.40	18.85	2027		
Guaranteed contents	2.50	3.00	5.00	1.00	2.00	8.00	6.00	5.00	.....	21.20		
Standard sample..	2.97	3.60	5.11	2.72	1.60	9.43	7.83	5.12	11.20	24.82	2028	Miss S.E. Wright.	
Guaranteed contents	3.30	4.00	6.00	2.00	1.00	9.00	8.00	7.00	20.92			
Standard sample..	3.37	4.10	6.65	1.86	2.56	10.07	8.51	7.92	11.07	30.17	2029		

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TABULATED DESCRIPTION OF STANDARD SAMPLES OF

Date when Advised.	Number of Sample.	Designation.	Name of Manufacturer.	By whom sent.	From what materials Produced.
1907.					
Feb.	4/2030	Cumberland Super-phosphate.	The American Agricultural Chemical Co., Boston Sales Dept., Boston, Mass.	Manufacturers.....	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate or muriate of potash, sulphuric acid.
	4/2031	Cumberland Potato Fertilizer.	" " ..	" ..	" " ..
	4/2032	Cumberland Fine Ground Bone.	" " ..	" ..	.....
	4/2033	Standard Special for Potatoes.	" " ..	" ..	Bone black, animal bone, phosphatic guanos, dried fish, meat or blood, nitrate of soda or sulphate of ammonia, sulphate and muriate of potash, sulphuric acid.
	4/2034	Darling's Blood, Bone and Potash.	" " ..	" ..	" " ..
	4/2035	Clark's Cove Great Planet Manure.	" " ..	" ..	" " ..
	4/2036	A. A. C. High Grade Fertilizer with 10 p.c. Potash.	" " ..	" ..	" " ..
Apl.	18/2037	Bone meal.....	Nova Scotia Fertilizer Co., Halifax, N.S.	" ..	.....
	18/2038	Bilston Basic Slag...	Alfred Hickman Co., Bilston, England.	E. E. McNutt, Truro, N.S.	.....
May	18/2039	O'Dendorffs ground Basic slag.	Anglo-Continental Co., London.	H. H. McNutt, Lower Truro, N.S.	.....
	22/2040	Fertilizer A.	Victoria Chemical Co. Ltd., Victoria, B.C.	Manufacturers.....	Nitrate of soda, muriate of potash and superphosphate of lime.
	22/2041	" B.	" " ..	" ..	" " ..
	22/2042	" C.	" " ..	" ..	Muriate of potash and superphosphate of lime.
	22/2043	" D.	" " ..	" ..	Nitrate of soda, muriate of potash and superphosphate of lime.
	22/2044	Superphosphate of lime.	" " ..	" ..	Spent bone, charcoal and sulphuric acid.
	22/2045	Nittrate of soda.	Imported from Chili.	Victoria Chemical Co. Ltd., Victoria, B.C.	96 per cent real nitrate of soda.
	22/2046	Kainit.	Imported from Germany.	" ..	Kainit with 12 per cent potash.
	22/2047	Sulphate of potash.	" " ..	" ..	Sulphate of potash of 90.5 per cent.
	22/2048	Muriate of potash.	" " ..	" ..	Muriate of potash of 82.4 per cent.
	22/2049	Thomas Phosphate Powder.	" " ..	" ..	.....

SESSIONAL PAPER No. 14

AGRICULTURE FERTILIZERS, REGISTERED FOR 1907—*Continued.*

	RESULTS OF ANALYSIS.										Relative Value per ton of 2,000 lbs.	Number of Sample.	Name of Analyst.
	Nitrogen.		Phosphoric Acid.					Potash.	Moisture.				
	Total, including that of nitric acid and ammonia when present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.						
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	\$ cts.			
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	1.50	.....	18 40		
Standard sample..	1.93	2.35	5.24	3.87	2.24	11.35	9.11	2.47	14.37	20 25	2030	Miss S.E. Wright	
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	3.00	.....	19 90		
Standard sample..	2.16	2.62	5.88	3.39	1.92	11.19	9.27	3.69	14.42	22 40	2031	"	
Guaranteed contents	2.47	3.00	.....	.....	.....	20.60	.....	.....	.....	.....
Standard sample..	2.25	2.74	.....	16.00	6.39	22.39	16.00	.....	6.35	27 17	2032	"
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	3.00	.....	19.90		
Standard sample..	2.24	2.72	5.63	2.84	3.20	11.67	8.47	3.86	13.25	22 32	2033	"	
Guaranteed contents	4.10	5.00	5.00	2.00	1.00	8.00	7.00	7.00	.....	29 44		
Standard sample..	4.25	5.17	7.03	1.60	1.44	10.07	8.63	5.52	5.50	30 60	2034	A. C. Macfarlane.	
Guaranteed contents	3.30	4.00	6.00	2.00	1.00	9.00	8.00	7.00	.....	27 92		
Standard sample..	3.24	4.42	7.19	1.76	1.92	10.87	8.95	6.62	4.88	28 79	2035	"	
Guaranteed contents	2.40	3.00	5.00	1.00	1.00	7.00	6.00	10.00	.....	25 56		
Standard sample..	2.48	3.01	4.63	1.44	2.08	8.15	6.07	9.45	5.02	25 64	2036	"	
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	5.14	6.24	Tr.	18.07	7.67	25.74	18.07	.....	3.14	38 63	2037	"
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard sample..	.....	.....	.....	16.31	5.75	22.06	16.31	.....	0.32	19 67	2038	"
Guaranteed contents	.....	.....	.....	15.18	2.62	17.80	.....	.....	.....	18.53		
Standard sample..	.....	.....	.....	14.72	5.43	20.15	14.72	.....	0.55	17.82	2039	A. Lemoine.
Guaranteed contents	4.00	.....	.....	.....	.....	10.00	.....	7.00	.....	.....	
Standard sample..	4.06	4.93	10.23	0.38	0.90	11.51	10.61	7.95	9.95	34.72	2040	"	
Guaranteed contents	3.50	.....	.....	.....	.....	9.00	.....	11.00	.....	.....	
Standard sample..	3.36	4.08	9.78	0.80	0.80	11.38	10.58	11.83	.....	36.11	2041	"
Guaranteed contents	.....	.....	.....	.....	.....	12.50	.....	11.00	.....	.....	
Standard sample..	0.56	0.68	12.98	0.78	1.59	15.35	13.76	11.12	7.95	29.94	2042	"	
Guaranteed contents	2.50	.....	.....	.....	.....	10.00	.....	11.00	.....	.....	
Standard sample..	2.66	3.23	10.10	0.93	0.80	11.83	11.03	11.31	9.05	33.73	2043	"	
Guaranteed contents	.....	.....	.....	.....	.....	16.00	.....	.....	.....	.....
Standard sample..	0.56	0.68	17.14	1.29	1.59	20.02	18.43	.....	8.30	24.37	2044	"
Guaranteed contents	16.00	.....	.....	.....	.....	.....	.....	.....	.....	54.40		
Standard sample..	15.68	19.04	(Corresponds to 95.20 p.c. nitrate of soda.)					.....	1.80	53.31	2045	"
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	12.00	.....	12.00		
Standard sample..	.....	.....	.....	.....	.....	.....	.....	13.74	12.95	13.74	2046	"
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	50.00	.....	50.00		
Standard sample..	(Corresp'ds to 87.35 p.c. sulphate of potash.)							47.24	1.15	47.24	2047	"	
Guaranteed contents	.....	.....	.....	.....	.....	.....	.....	50.00	.....	50.00		
Standard sample..	(Corresp'ds to 79.61 p.c. muriate of potash.)							48.56	2.40	48.56	2048	"	
Guaranteed contents	16.00			
Standard sample..	12.48	4.79	17.27	12.48	Tr.	1.10	17.08	2049	"	

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TABULATED DESCRIPTION OF 173 STANDARD SAMPLES OF

Date when Advised.	Number of Sample.	Designation.	Name. of Manufacturer.	By whom sent.	From what materials Produced.
1907.					
May 14	2050	Standard.....	The American Agri- cultural Chemical Co., Boston Sales Dept., Boston, Mass.	Manufacturers ...	.....
June 10	2051	No. 1 Fertilizer.....	Standard Fertilizer & Chemical Co., Ltd., Smith's Falls.	"	Ammonia, potash and mag- nesia salts, mineral sup- erphosphate and fine bone meal.

SESSIONAL PAPER No. 14

AGRICULTURE FERTILIZERS, REGISTERED FOR 1907—*Concluded.*

	RESULTS OF ANALYSIS.										Relative Value per ton of 2,000 lbs.	Number of Sample.	Name of Analyst.
	Nitrogen.		Phosphoric Acid.					Potash.	Moisture.				
	Total, including that of nitric acid and ammonia where present.	Total calculated as ammonia.	Soluble in water.	Citric soluble.	Insoluble.	Total.	Total available.						
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	\$ cts.			
Guaranteed contents	2.06	2.50	5.00	3.00	2.00	10.00	8.00	1.50	.....	18 40	2050	Miss S. E. Wright
Standard sample..	2.26	2.74	6.65	3.87	3.07	13.59	10.52	2.89	13.73	23 73		"	
Guaranteed contents	1.65	2.00	.....	.....	.....	10.00	9.00	1.50	....	17 31	2051	"
Standard sample..	1.83	2.23	8.15	1.45	4.31	13.91	9.60	3.31	5.60	22 20			

